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MANAGEMENT • PLANT • TRAFFIC • ACCOUNTING • LEGAL • COMMERCIAL

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

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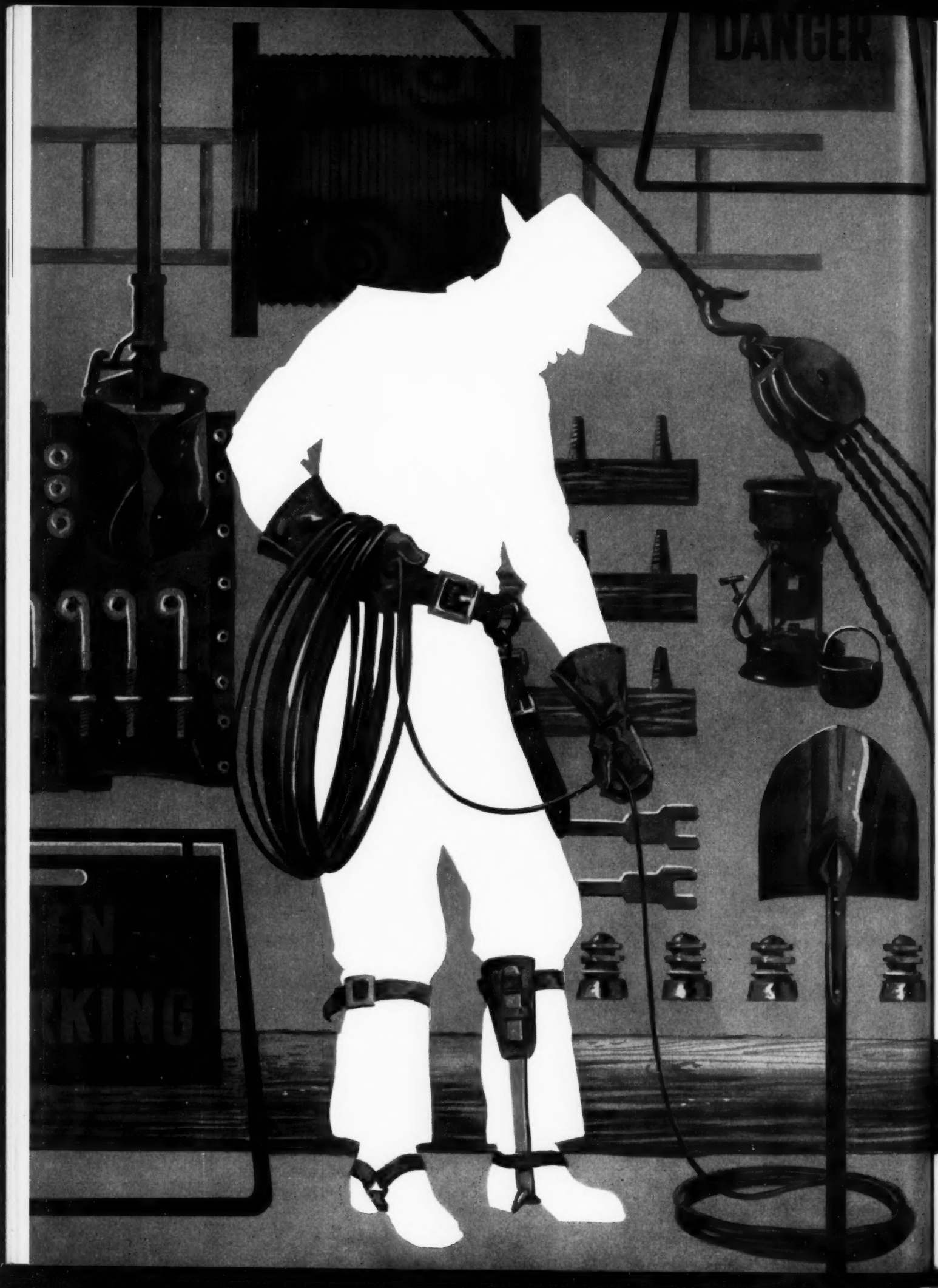
DANGER

Here's the spot for a man of yours

The time between the final snow flurry and the first warm rain is the time to take an inside look at your winter-weary outside plant.

It's time to take a "quality inventory" of supplies . . . to check tool kits for winter losses . . . replace weakened belts and outmoded climbers—and equip your men for their work of inspecting lines and poles for ice damage, replacing broken insulators, checking terminal boxes.

And it's time to know that the construction materials and supplies you send out on the job are the *best*—like those we distribute for the companies listed below. Get your orders in now and avoid embarrassing, last-minute delays.

Stromberg-Carlson distributes the products of many leading manufacturers, a partial list of which follows:

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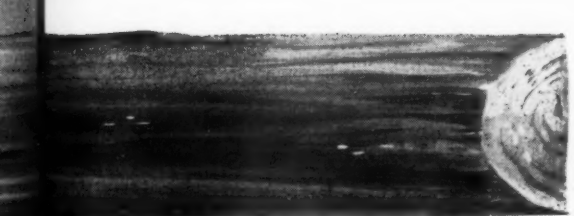

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with KELLOGG'S more than 100 Distribution points across the nation--to get the kind of line supplies you need when you need them

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Secondly, Kellogg stocks everything you'll ever possibly need for inside or outside use — right down to the last nut and bolt. And you can be sure that everything Kellogg ships has come through the most rigid quality and performance tests with flying colors!

Then, there's the careful, personal attention that is given every order regardless of size. Only experienced telephone men, who understand your problems, will be handling your order. It's their job to see to it that you get the materials that best fit your needs . . . and on time!

We think these are good reasons why you should send your next order for line supplies to Kellogg.

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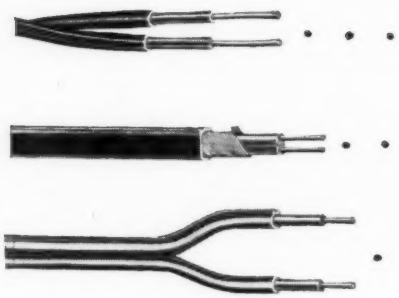
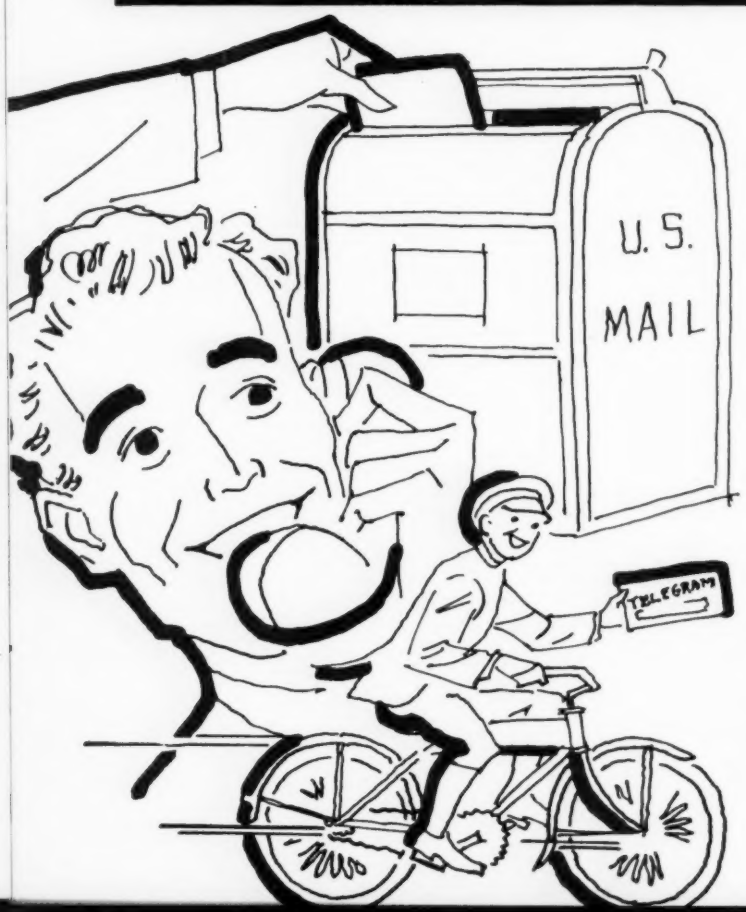


Afraid of Winter? Keep your lines in action—your maintenance costs down, with DIAMOND WIRE & CABLE CO.'s RED-D Drop Wire. Superior adhesion, conductivity, tensile strength. Available in Copperweld and Signal Bronze.

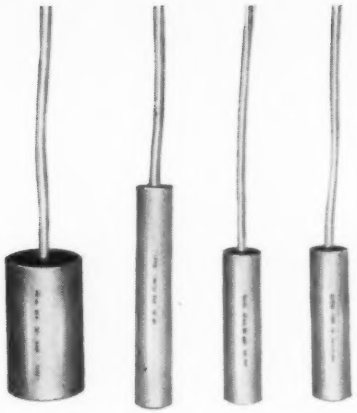
The Time-Tested Steel Strand. A ductile, adherent zinc coating applied by the famous Crapo Galvanizing Process, provides lasting protection against corrosion in INDIANA STEEL & WIRE CO.'s Crapo Strand. Its rugged strength minimizes maintenance expense.

KELLOGG *for Line Supplies*



• Write, 'phone or wire all orders for Line Supplies to your nearest Kellogg Warehouse. Kellogg's stocks of guaranteed line supplies are complete--shipments are made immediately. Save time and money--send *one* order to *one* source--KELLOGG!

World Standard for Quality since 1870—Hemingray Insulators — a product of OWENS-ILLINOIS, are available in variety of styles and sizes for immediate delivery. No. 45—shown—employed for all toll and trunk circuits exceeding ten miles in length.



Application of Loading Coils on telephone circuits, reduces unit loss to ⅓ or ¼ the non-loaded value—coils are designed for use on 2-wire telephone circuits in non-quadded paper insulated or plastic cable. COMMUNICATION EQUIPMENT & ENGINEERING COMPANY.

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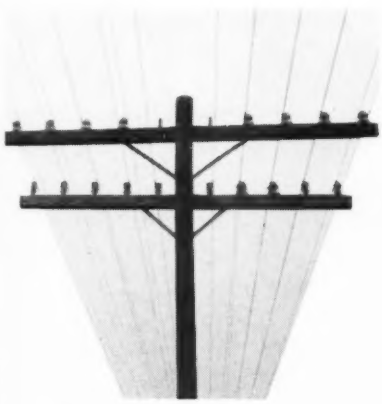

Finest Quality Crossarms available for immediate delivery from nearby warehouses. Pony or standard crossarms in both fir and pine. Choose either treated or untreated Fir Crossarms — or the Penta-treated Pine. CONTINENTAL CROSS-ARM COMPANY, INC.

Designed for Maintenance-Free Operation —The Cook P-L-X Cable Terminal requires no stubbing, splicing nor potting. Only plastic loop cable terminal that can be protected. When ordering, specify cable size (6 thru 51 pair). Made by COOK ELECTRIC COMPANY.

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Your wood-treater is a specialist in giving you pressure-creosoted poles that are both clean and long-lasting

For years, pole buyers have known that the *surest* way to obtain maximum pole life was by specifying poles pressure-treated with Creosote. And with modern wood treating methods, they are getting *clean* pressure-creosoted poles without sacrificing service life.

As a specialist in wood preserving, your treater has the up-to-date knowledge and the modern equipment needed to give you this desired combination of pole qualities.

He selects sound trees for treating purposes and gives them careful handling before and after treatment. He uses a top-quality preservative like USS Creosote.

During treating operations, he keeps all conditions under careful control. And as a final step, every pole is inspected to make sure it meets your specifications for treatment and cleanliness.

With this experience and technique available to you, you can be sure of proved pole life and cleanliness when creosote is used.

For outstanding results, make USS Creosote a part of your pole specifications. It is a top-quality product, produced under controlled conditions in United States Steel's tar distilling plants. For complete information, contact the nearest U. S. Steel Coal Chemical Sales office listed below or write directly to United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.

SEE THE UNITED STATES STEEL HOUR. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

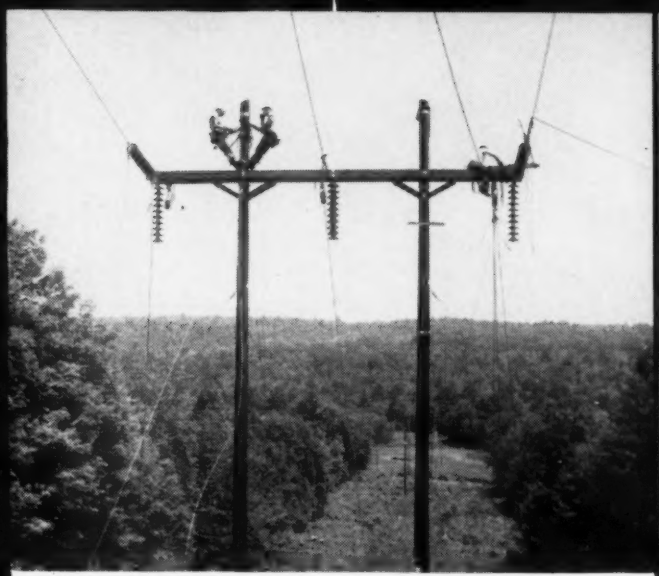
USS CREOSOTE

SALES OFFICES IN PITTSBURGH, NEW YORK, CHICAGO, CLEVELAND, SAN FRANCISCO AND FAIRFIELD, ALA.

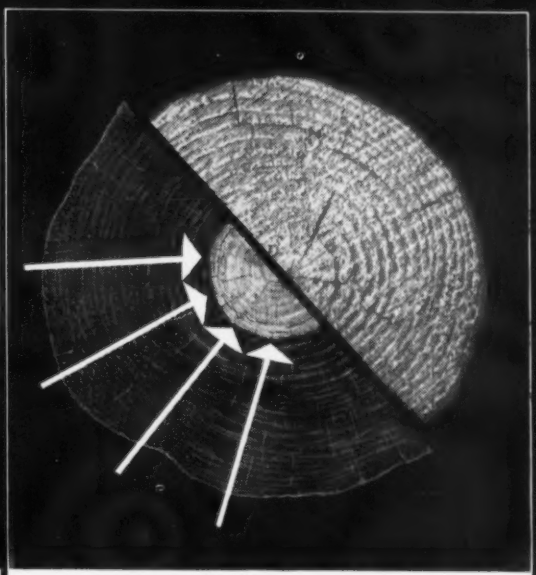
UNITED STATES STEEL

Another utility case history

Clean Penta-preserved poles won't stain or bleed



PUBLIC SERVICE CO. OF NEW HAMPSHIRE specifies clean Penta protection for western red cedar poles, Douglas fir crossarms. Since 1951, this company has used Penta-treated wood to resist decay and wood-boring insects. Penta gives wood installations at least 4 times longer life.



PENTA GOES DEEP! Cross-section of two poles—Penta-treated at left, untreated at right—shows depth of Penta penetration. Penta effectiveness is as high after 20 years as it is after one month. Penta provides lasting economy!

PENTA PROTECTS WORKMEN, TOO! Penta stays put, will not bleed or leach out of wood. Penta-treated wood is clean, does not "burn" hands or stain clothing and, when properly treated, it is odorless.

SPECIFY PENTA for POLES, CROSSARMS, TRANSFORMER PLATFORMS, BRACES, CONTROL BOXES, PLANKING. More than 85 treating plants will apply Penta for you. Write us for this list, and for "Poles and Crossarms" booklet. Organic Chemicals Division, MONSANTO CHEMICAL COMPANY, Box 478-U-2, St. Louis 1, Missouri.

MONSANTO
CHEMICALS – PLASTICS

SERVING INDUSTRY...
WHICH SERVES MANKIND

FLASHES AND PLUGS

LADY IN DISTRESS. A Milwaukee hostess disappeared from her party at a local restaurant the other night, reports the city's *Journal*, and was discovered, 20 minutes later, locked inside a balky telephone booth.

Rescuers pulled the handle off the door without opening it. They took the hinges off the door but it was still stuck. A couple of huskies went to work on the door with hammers.

We are proud to announce that our heroine was finally rescued intact without a scratch. There was not much left of the telephone booth.

• • •

MODERN MEMO. A Los Angeles bookbinder recently had an automatic telephone-answering machine installed in his office so callers can leave messages when he is absent. But he also has put the gimmick to another use.

Other day a friend heard him dial his office number, the monologue going something like this: "Verrico, this is Verrico. Don't forget that Tuesday appointment and pick up a loaf of bread when you leave the office."

After he hung up, he noticed his friend eyeing him curiously, so Mr. Verrico, a whimsical fellow, redialed the number. "Verrico, this is Verrico again," he declared loudly. "What did I say?"

Almost caused his friend to go away talking to himself—without benefit of automatic answering device.

• • •

PRIVACY INVADED. A young man was hailed into court for fighting.

"Tell your story," said the judge.

"Well, your honor," said the lad, "I was in this telephone booth talking to my girl, and this guy wants to use the telephone. So he opens the door and yanks me out by the neck and tossed me out on my ear."

"Then you got mad?" asked the judge.

"Well, a little," replied the young man, "but I didn't really get mad until he grabbed my gal and threw her out, too."

• • •

TELEPHONE THERAPY. The Newark (N. J.) *Evening News*, examining some telephone statistics recently (apparently in the New Jersey Bell annual report) takes occasion to speculate on the superfluous conversations, the endless gossip, the teen-age "talkathons" facilitated by the telephones now used by four out of five New Jersey families.

"However," philosophizes the *News*, "in addition to the fact that a lot of calls are of vital importance, the telephone may also have therapeutic value in relieving loneliness, confusion and fear.

"A lot of damage may have been done by some of the trillions of words spoken on the billions of calls in New Jersey last year, but even more damage would have been done had none of them been spoken."

CIRCULATION

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Contents

A RESIN-SEALED APPROACH TO COMMUNICATION SPLICING 17
By E. W. Bollmeier

IN THE NATION'S CAPITAL 20
By Francis X. Welch

PENINSULAR'S 48-CHANNEL MICROWAVE SYSTEM 22
By Marcus Donaldson

THE PLANT MAN'S NOTEBOOK 26
By Ray Blain

THE OPERATOR'S CORNER 30
By Mayme Workman

MINNESOTANS FIGHT INCREASE IN GROSS RECEIPTS TAXES 31
By R. C. Reno

COURTS AND COMMISSIONS 38

REGINA—CANADA'S NEW COMMUNICATION CENTER 48
By J. L. Pulford and D. M. Brown

H. D. FARGO Jr., *President & Advertising Manager*
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give 'em better Service

increase your Revenue

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It's no problem at all to "sell" the Stromberg-Carlson 6K System to business subscribers whose needs call for multi-line service. We even have a handsome booklet (T-126) you can show to, and leave with, your prospects.

And why should it be a *Stromberg-Carlson* system?

Because the 6K is the industry's easiest system to install and maintain. Factory assembly of telephone *with* terminal box, plus complete standardization of the system—mean much less outlay of your own money when you put a system in or come back later to expand or service it.

All of which is a PROFIT story. Ask your Stromberg-Carlson representative to help you work out a plan for aggressively going after this nice extra business.

XY

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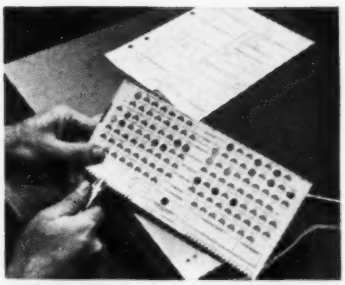
XUM

How your telephone call asks directions... and gets quick answers

1



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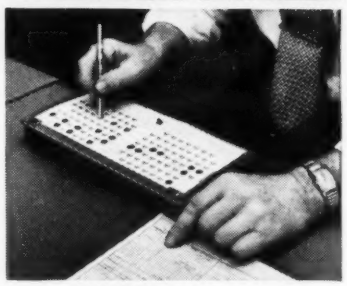
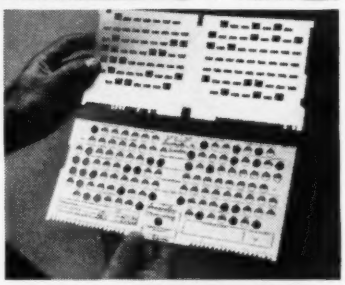


Perforated steel cards, which give directions to the Long Distance dial telephone system, are easy to keep up to date. New information is clipped (1) and punched (2) by hand on a cardboard template. This guides the punch-press that perforates a steel card (3), and the two are checked (4). The new card is put into service in the card translator (5).

↓3

4



5

When the Bell System's latest dial equipment receives orders to connect your telephone with another in a distant city, it must find—quickly and automatically—the best route.

Route information is supplied in code—as holes punched on steel cards. When a call comes in, the dial system selects the appropriate card, then reads it by means of light beams and phototransistors. Should the preferred route be in use the system looks up an alternate route.

It is a simple matter to keep thousands of cards up to date when new switching points are added or routing patterns are changed to improve service. New cards are quickly and easily punched with the latest information to replace out-of-date cards.

This efficient, flexible way of keeping your dial system up to the minute was devised by switching engineers of Bell Telephone Laboratories, who are continually searching for ways to improve service and to lower costs. Right now most of the Long Distance dialing is done by operators, but research is hastening the day when you will be able to dial directly to other telephones all over the nation.

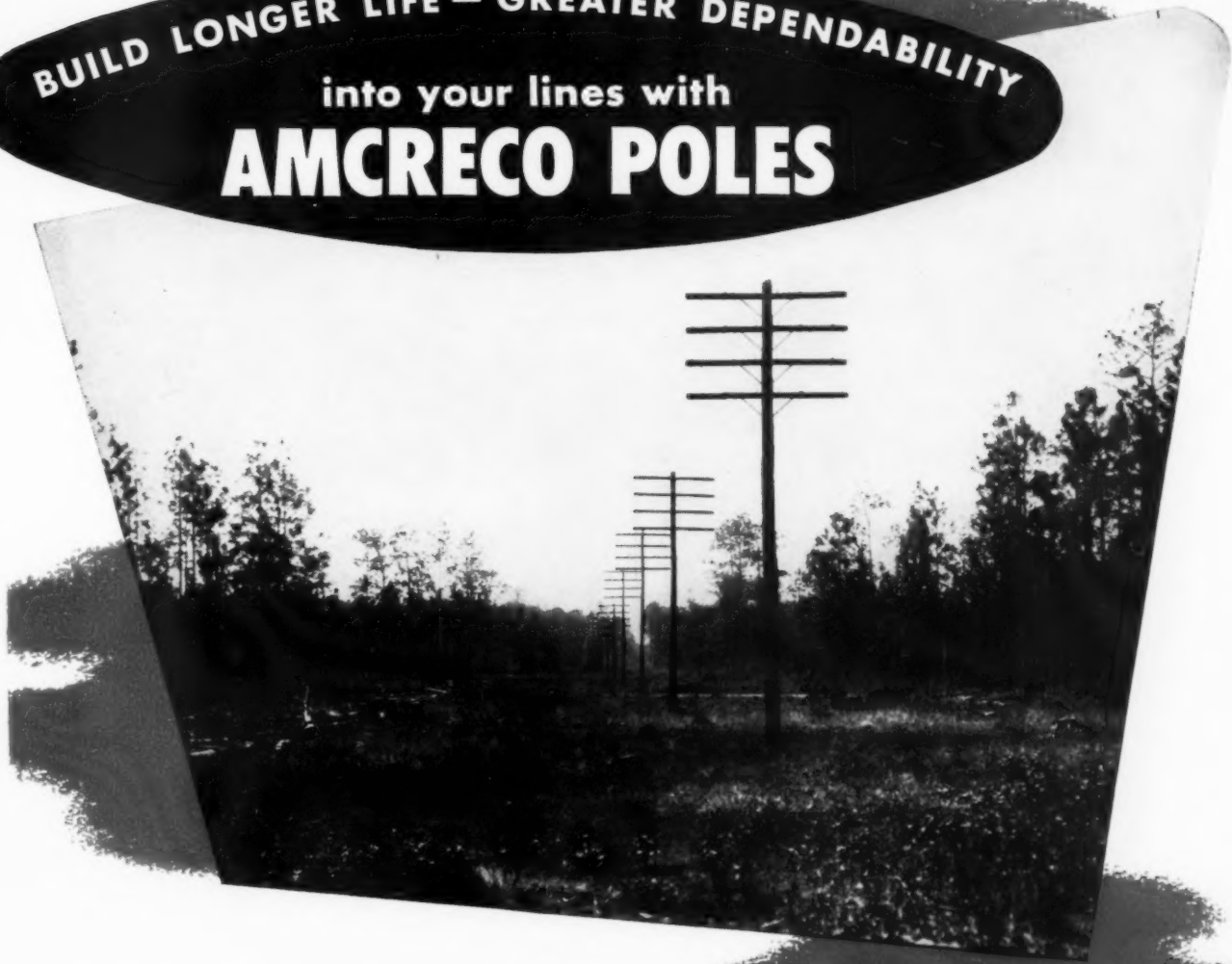
BELL TELEPHONE LABORATORIES

Improving telephone service for America provides careers for creative men in scientific and technical fields.

BUILD LONGER LIFE — GREATER DEPENDABILITY

into your lines with

AMCRECO POLES



To give you the best telephone pole possible, Amcreco poles are pressure treated in creosote. Not just dipped, not just soaked — but creosoted under pressure by the Amcreco treatment methods. This treatment forces protective creosote right into the cells of the wood — preserves the natural strength of the wood — assures many years of dependable service.

Poles pressure treated with creosote by Amcreco methods have high resistance to fungi, to insects, and have greater strength throughout the life of the pole. This means fewer replacements and lower maintenance costs with less service trouble. For your next job, contact one of our nearby sales offices.

POLES
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CROSSARMS
CONDUIT

Amcreco
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Products

AMERICAN CREOSOTING COMPANY

COLONIAL CREOSOTING COMPANY — AMCRECO — GEORGIA CREOSOTING COMPANY

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18 FIELD SALES OFFICES TO SERVE YOU

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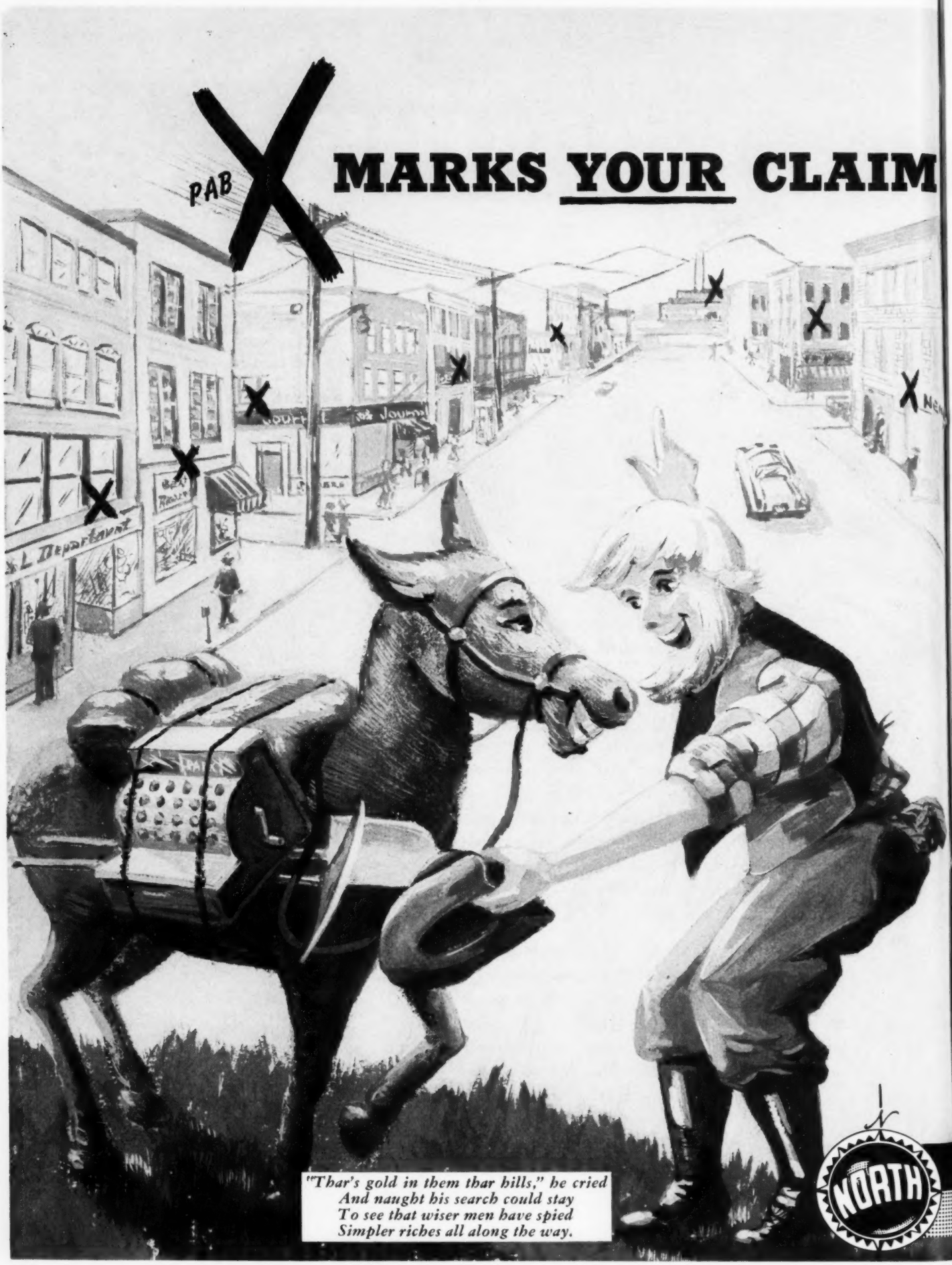
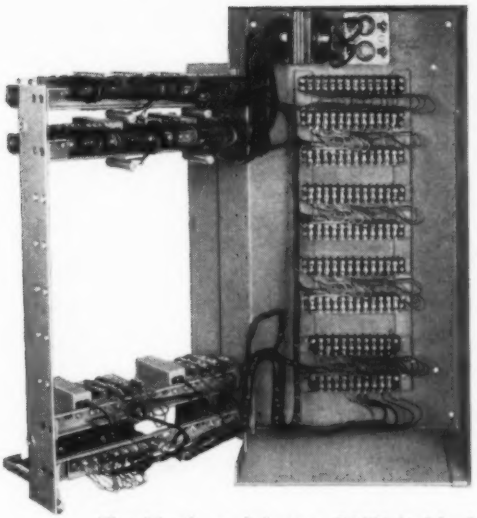

PAB
MARKS YOUR CLAIM
"Thar's gold in them thar hills," he cried
And naught his search could stay
To see that wiser men have spied
Simpler riches all along the way.
NORTH

IN REAL "PAY DIRT"



The North push-button PABX is ideal wherever requirements will not exceed 6 CO trunks and 20 stations. All stations are equipped to originate, answer, hold and transfer calls.

You need not trek to distant hills in search of good prospecting when you run an on-the-ball telephone system in an up-to-date community. You have a claim already staked out within easy reach of your own office.

Take an analytical trip through your subscriber area. It's a ten-to-one probability that you will find a surprising number of opportunities to increase the "gold-standard" of the plant you now operate, by selling the additional advantages of PABX Service to commercial, industrial, professional and institutional customers.

It will not be difficult for you to see why the most practical equipment with which to prove in this extra business is NORTH PABX. Whether it be a modest push-button installation or hundreds of stations, the use-tested dependability and freedom from service back of North equipment is a matter of record with many successful telephone companies.

Available in Canada through ERICSSON TELEPHONE SALES of CANADA, Ltd. 1410 Stanley Street Montreal 2, P.Q.

NORTH *"All Relay"* PABX

Ups Your Revenue-To-Plant Ratio

THE NORTH ELECTRIC MANUFACTURING COMPANY

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Don't be like the Pinacate beetle, who stands on its head when disturbed. If you can't cut costs further, there's still a way out. How? By getting a greater yield from your Directory. Our business is making directories more productive. We've done it for many other telephone companies. Perhaps we can do it for you.
Let's talk it over.

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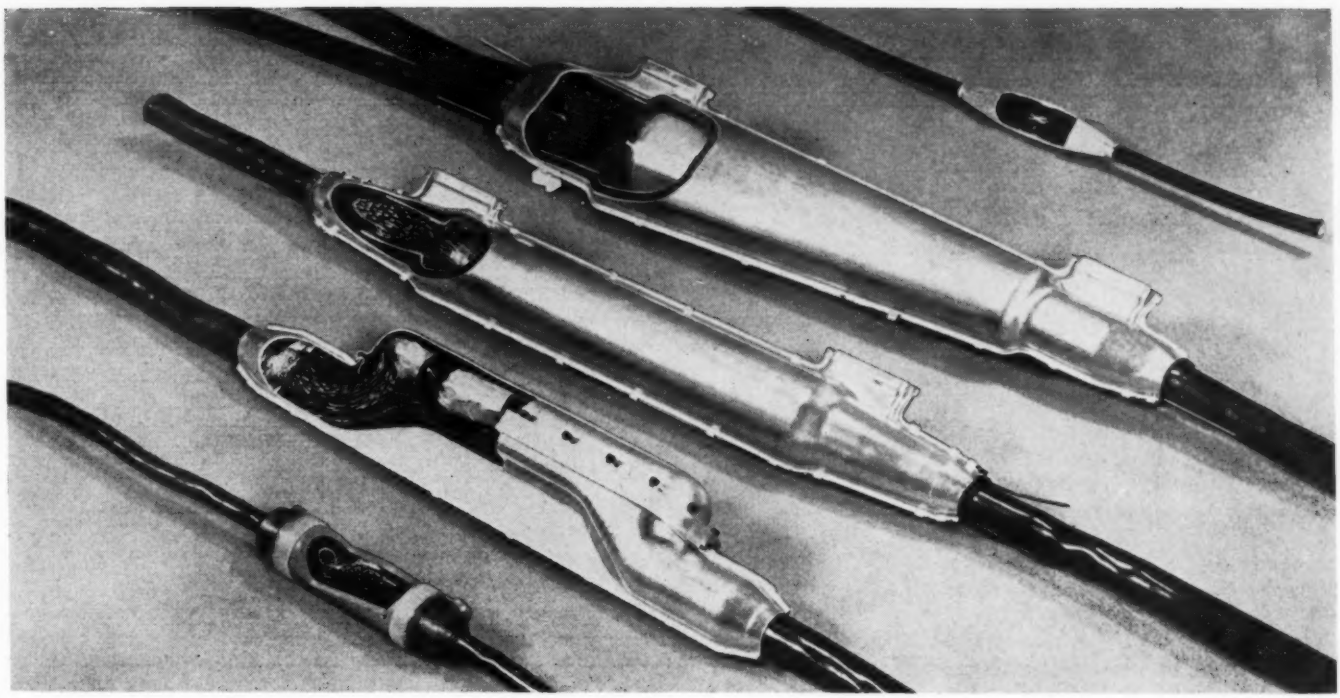

A Resin-Sealed Approach To Communications Splicing

*By E. W. BOLLMEIER**

A CONSIDERABLE degree of success has been met in the industrial and field usage of epoxy thermosetting plastic resins as insulating and sealing materials. This success has prompted Minnesota Mining & Manufacturing Co. to investigate and develop cable splicing techniques using these materials. It is the purpose of this paper to present a summary of progress made during 1954 in the specific field of communication cable splicing.

General Consideration

During the past three years the electrical industry has become increasingly aware of the desirable properties of epoxy resins. Various formulations and types of liquid and solid epoxy resins are now used by manufacturers for encapsulating and insulating many types of components and assemblies. Many field applications also exist, in which epoxy resins can be used to upgrade job quality and reduce cost through labor saving. Realizing this, Minnesota Mining & Manufacturing Co. has placed considerable emphasis on field-use epoxy resins and techniques.

Liquid epoxy insulating resins require adoption of new techniques in handling for many of their potential uses. These resins require the addition and mixing-in of a suitable hardener, or catalyst, in order to react to the solid state. The resins used in manufacturing utilize catalysts which permit a considerable length of "life" at room temperature in the liquid state. These resins require oven baking to obtain reasonable curing times. The associated time and equipment required for field usage of this oven curing material would, of course, all but cancel its useful properties.

As a solution to this basic field problem, a rapid self-curing epoxy resin has been developed by Minnesota Mining & Manufacturing Co. under the name of "Scotchcast" No. 4 in the "Unipak" container *(Fig. 1)*.

This field-use flexible film package is designed to permit handling and mixing of accurately proportioned amounts of resin and hardener. A simple side pull ruptures the diaphragm separating the two components and mixing is accomplished by kneading the package with the hands. The resin starts to react immediately and is dispensed directly from the package. This epoxy resin cures to the solid state in ap-

*Mr. Bollmeier is Chief Engineer of Electro-Mechanical Products of Minnesota Mining & Manufacturing Co. He presented this paper at the 1954 annual Signal Corps Symposium on wires and cables.

proximately 10 minutes after mixing. The cured plastic exhibits dielectric strength of 800 volts per mil in thin films, excellent oil and moisture resistance, low moisture absorption, good weathering ability and "tough flexibility."

Background of Splice

The original and continuing impetus for development of the "cast splice" comes from those splicing problems which require true waterproofness. The first cast epoxy splice developments were in the field of 5,000-volt direct burial distribution cable. The approach taken in this field is one of solidly encapsulating the splice area with a "block" of resin, properly distributed as it cures for ample dielectric protection and bonding to cable insulation. Proper distribution of the casting is obtained through use of a simple one-use plastic mold which contains the liquid resin around the splice before cure and provides additional surface protection for the splice. Adaptability to various sizes and types of cable is provided in the mold through a series of cutting grooves spaced along the conical mold ends. By trimming at the proper cutting groove, the mold will fit a sizeable range of cable diameters. The "Unipak" resin package, molds and connectors are being made available in kit form for the common power splicing applications. Considerable expansion of this technique is being carried on in the power distribution field not only for wet service, but also for more common spicing applications, because of the simplicity of use and splice uniformity obtained.

In early 1954, the "Unipak" resin package began to find use in the communications field as a blocking agent for lead and plastic sheathed telephone cable. This application consists of placing a temporary or reuseable conical form around the cable sheath end and pouring the resin into this form to fill the interstices between conductors, there reacting into a solid thermoset plastic moisture seal. A conventional tape splice made on a cable prepared in this manner is effectively waterproofed against moisture entry into a splice through the cable itself. Likewise, paper insulated cable is protected against moisture entry from a splice.

This method of forming a block is limited due to the necessity of arranging the cable end vertically to pour the block. Its use is thus limited for practical reasons to splicing new cable lengths together or for cable blocking at terminations. It is difficult to pour a well shaped block with this technique where the cable must remain horizontal. The low viscosity of "*Scotchcast*" No. 4 effectively permits saturation of

E. W. BOLLMEIER

all conductor interstices in plastic cable, usually filling the cable solidly 2 to 4 inches back from the end of the sheath. These blocks uniformly withstand pressures over 30 p.s.i. without gas leakage.

The excellent field results obtained from plastic telephone cable splices made with these epoxy resin moisture blocks have promoted interest in the development of a complete epoxy resin communications and signal cable splice. The goal set for this development includes the following major specifications:

(1) Cable moisture blocks, with the option available for no blocking on gas filled systems.

(2) The greatest possible cable material and size range consistent with all other specifications.

(3) A minimum of time and skill for use.

(4) Permanence in service, but openable for rework of splice.

(5) Tensile strength in excess of the cable, including self supporting cable.

(6) Appearance consistent with the high standards of the communications and signal industry.

(7) Adaptability to all splice configurations.

As in all selections of ideal conditions, certain exceptions immediately occur. The major exception taken by members of the communications field is in regard to the need for reopening. Valid reasons exist for wanting both a splice which can be easily opened and one which need not be. However, a large majority of splices must be openable, and some with reasonable ease. Development of the epoxy resin communications splice has, therefore, been directed into three categories as regards "openability". These are:

(1) *The Openable Splice.* A splice enveloped, in effect, by a field cast one-piece epoxy resin shell, with or without cable blocks per users option; openable without cable damage, but original splicing material non-reusable.

(2) *The Reopenable Splice.* A splice providing cable blocks or not, according to users option; permits fast reentry and closure without cable damage or destruction of original splicing materials.

(3) *The Solid Splice.* An epoxy solidly cast splice permitting no reentry, but using a minimum of material; primarily for splicing new lengths or repair of small cable.

Progress during 1954 in these three communications splice categories has been as follows:

The Openable Splice. As described under the above Item 1, the openable splice provides complete envelopment by a one piece cast plastic shell. If the option to form cable blocks is taken, this shell can be cast through the cable conductor bundle at each end of the splice. Provision is made, however, for maintaining the conductor splice area free and clear of the resin. This is essential, of course, if the splice is to be reworked at some future time.

The openable splice may be seen in *Fig. 2.* The splice area is seen within a thin aluminum preformed housing

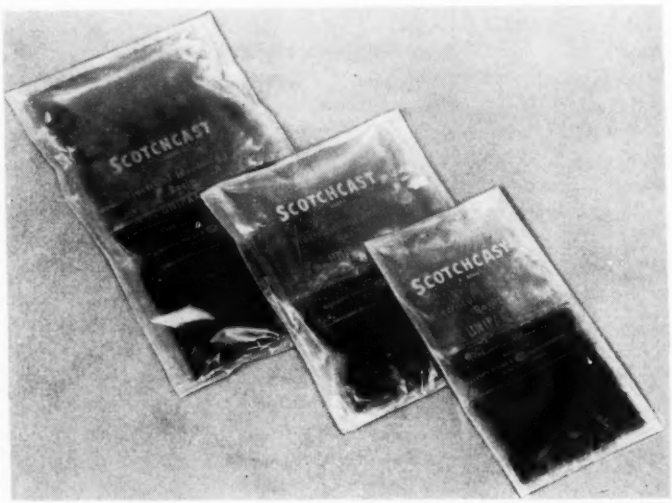

Fig. 1.

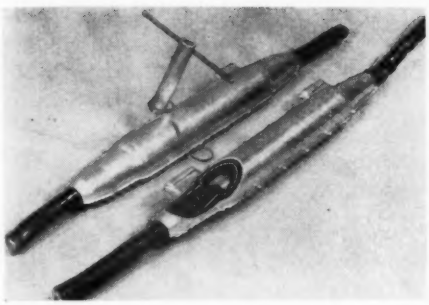

Fig. 2. Openable straight splice in section.

Fig. 3. Openable straight splice partially assembled.

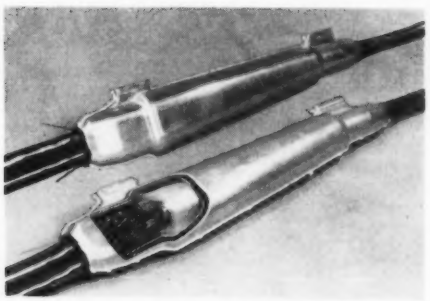

Fig. 4. Openable wye splice in section.

which serves two purposes; first, to exclude the liquid plastic from the splice area and, secondly, to provide a member for continuation of shielding over the splice.

Referring to *Fig. 3*, a black material may be observed between the conductor bundle and the ends of the inner chamber. This black material is a wrapping of self-fusing rubber "putty" which is applied to the conductor bundle in strip form before assembly of the inner chamber over the splice area. The inner chamber, in two halves, is located over the splice and banded with plastic tape at the ends. The tension of this tape serves to compress the rubber putty, forcing it into the cable and forming a liquid resisting seal. This seal is adjustable to any conductor bundle which will enter the inner chamber end by using more or less putty around the conductor bundle. This seal is not depended upon to block the cable against future moisture entry, but merely to prevent entry of the liquid "Scotchcast" epoxy resin into the splice area when poured.

On the outward side of this seal, the conductor bundle in *Fig. 2* is seen embedded in the plastic adjacent to and under the cable sheath. It is this embedment which provides the cable moisture block. The cable shield is attached to the end of the inner chamber at this point by insertion into a tab-and-slot receptacle in the chamber end, and secured by crimping with pliers and/or soldering.

The outer thin aluminum case surrounding the inner chamber is so formed as to space itself evenly about the inner chamber. The outer case is formed in two halves which are joined by squeezing the tabs along its seams with pliers. Two pouring spouts are formed into this seam, through which the liquid resin is poured. The conical ends of this outer case permit cutting to enlarge the holes to accommodate various cable diameters. The projections formed by the pouring spouts may be removed, ignored or used for mounting to messenger in a variety of ways.

Opening the Openable Splice

The means for opening this splice is provided in a unique way which does not impair splice permanence in any manner. Referring to Fig. 2 again, two small stainless steel wires may be seen emerging from the ends of the sectioned splice. These wires are attached to the inner chamber and pass lengthwise through the complete splice. Opening of the splice is accomplished by ripping these wires through the inner case, resin layer and outer case. The ripping action is accomplished by winding the wires on a large "key", similar in principle to the familiar coffee can opener. Thus, two cuts are made outward from the heart of the splice. The two splice halves may then be pried apart and removed from the cable. The prying action is required to break the bond between cable block and the aluminum inner chamber. The blocks are thus preserved while the splice is open, and may be reinserted into a new splice.

Reviewing the seven development goal specifications previously outlined, the openable splice compares as follows:

(1) CABLE MOISTURE BLOCKS. Blocks are provided simultaneously with pouring of the entire splice. If not desired, the blocks may be omitted by trimming the cable sheath to a shorter opening length and sealing the inner chamber to the sheath, rather than to the conductor bundle. Thus no resin can soak into the conductor bundle.

(2) CABLE MATERIAL AND SIZE RANGE. The splice illustrated in Figs. 2 and 3 will handle plastic or lead sheathed telephone cables ranging from 26-pair through 76-pair or other cable ranging from ⅝ inch to 1⅛ inch O.D. Sheath material may be lead, vinyl, polyethylene or rubber or any combination in the same splice. Specific adhesion of the resin varies with all these materials, but pressure testing over cycling temperature conditions indicates no leakage with any combination of these sheath materials at 30 p.s.i. gas pressure.

(3) ECONOMY IN TIME AND COST. After completion of the conductor splice, assembly and pouring of the splice may be accomplished by one man comfortably in 20 to 30 minutes. No highly developed skill is required. The metal parts of this splice are basically inexpensive material and manufacture. The inner chamber considerably reduces the quantity of resin required, compared to an equivalent size solidly cast splice. The installed cost of this splice is potentially lower than existing methods.

(4) PERMANENT, BUT OPENABLE. The combination of metal and plastic, which form the one-piece case and cable block, affords a degree of splice protection approaching hermetic sealing. The "rip" wire opening feature allows opening without impairing permanence in any respect.

(5) TENSILE STRENGTH. Tensile tests have shown splice strength to exceed the tensile strength of the largest copper conductor telephone cable in the range covered by one splice size. Cable breaks are uniformly obtained beyond the splice. It is noteworthy that the cable block provides also a dead-end of the cable through anchorage to all conductors. The conductors within the inner chamber remain unstressed even at cable breaking loads. The epoxy plastic shell and aluminum case absorb the full tensile loading.

Little testing has been done with self supporting cable. However, it is indicated that no special consideration need be given the splice for satisfactory operation with self supporting cable.

(6) APPEARANCE. This splice should adequately meet the industry's desire for clean, neat-appearing above-ground installations. The materials used in the splice have been selected not only for service and appearance, but also for weathering ability. In regard to coastal underground or direct burial service, corrosion of the outer case may occur but damage is limited to appearance only. The shell of plastic beneath provides the main line of protection. The experience in regard to corrosion should be similar to past history of aluminum terminal boxes, etc.

(7) ADAPTABILITY. *Fig. 4* illustrates the wye or bridge splice of size range equivalent to the straight splice of Figs. 2 and 3. This splice permits splicing into 0 to 100 per cent of the straight run pairs. The wye splice is equivalent to the straight splice in electrical and mechanical properties.

The Reopenable Splice. The distinguishing feature of the reopenable splice is the fast and easy re-entry possible without destruction of any of the material involved. This requirement inevitably leads to consideration of mechanically clamped gasketed closures. So led the course of development of the "Scotchcast" reopenable splice. Gasketed closures often mean trouble

(Please turn to page 44)

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★ ★ ★ IN THE ★ ★ ★ NATION'S CAPITAL

by FRANCIS X. WELCH WASHINGTON EDITOR

Decline in telephone loans reflects REA's efforts to eliminate earlier trend for applicants to ask for more than they needed. New York Congressman introduces bill to authorize wire-tapping in certain types of federal court prosecutions.

A GOOD MANY telephone company people may have seen a rather tiny and cryptic item in the *Wall Street Journal* of Mar. 4, which stated: "Telephone loans to rural firms and co-ops buck borrower resistance. Eisenhower's Rural Electrification Administration wants to step up lending to expand telephone service on the farms. But loan applications are falling off; so far this fiscal year, they're 28 per cent behind the like months of last year."

Taken at its face value, the implication would seem to be enough to raise some eyebrows. Is the appetite for REA telephone loans becoming sated — despite the fact that more than half the farms in the United States have no telephones? Does REA have more money for loans than it can spend for prudent loan applications? Are telephone companies turning to other sources of financing for rural plant construction? Or have the politicians in Congress simply tried to push the politically popular REA too far ahead of practical demands for loans by giving the REA lush appropriations which it did not request?

All these questions might pop in the mind of the reader after seeing the foregoing excerpt from the *Wall Street Journal.* There are a number of contributing reasons for the falling off in the total dollar amount of rural telephone applications received by REA. But the most important one is quite unexciting. It boils down to simply a matter of procedure.

Before last year, REA loan applications for both rural telephone and rural electrification loans were processed in Washington. When a cooperative or telephone company applicant applied for a loan, REA headquarters stamped it, filed it, and noted the total dollar amount requested. Every so often the total amounts of the various applications were added up and periodically released as the aggregated sum applied for in "Applications Received."

The trouble with this centralized procedure was that it created a false picture—an unrealistic appraisal of the practical needs of the applicants. In other words, the applicants had been getting into the rather human habit of asking for more than they actually needed on the theory that REA would cut it down to proper size before any loans were finally approved or dispersed. And so, some of the applications came in for rather fantastic amounts—all out of proportion to cost of plant construction required and entirely out of line with prudent and practical program planning.

The REA loan staff in the Washington headquarters did, in the course of time, cut these applications down to size, so that no particular harm was done outside of the applicant blowing a few soap bubbles in the original application. But the official tallying of these original figures created the impression that there was more demand for REA loan money by rural telephone applicants than actually existed on any trustworthy basis.

And so last spring, REA developed a new loan procedure, whereby original applications were given a preliminary processing in the field. This had the effect of screening some of the soap bubbles so that when the application finally showed up on REA's books in Washington, under the heading of new "Applications Received," they were somewhat deflated.

A secondary explanation of the discrepancy between applications received in recent months and those on file one year previous was the temporary lag caused by this new procedure and the fact that summer months accentuate the lag. Thus, we see that as of last November (1954) REA had received, in new applications for rural telephone loans, requests for amounts totaling over 11.8 million dollars since the beginning of the fiscal year, which started July 1, 1954. This was less than half of the total (over 23 million dollars) of new applications received during the same five-month period from July 1, 1953, to November, 1953.

But consider the fact that by last month the comparative gap had dwindled. The total new applications received as of Feb. 26, 1955, amounted to over 26 million dollars compared with about 35 million dollars during the same period one year previous. And so the new applications are catching up with the earlier records, to some extent, as the year progresses.

But the fact remains that REA rural telephone loan applications are not materializing as rapidly or as ostensibly as some of REA's enthusiastic supporters in Congress anticipated. There is a possibility that REA will have difficulty spending all the new loan appropriations which Congress insisted on authorizing by the end of the present fiscal year, July 1, 1955. It may have further difficulty spending as much money as Congress thinks it ought to spend in the coming fiscal year of 1956—especially if Congress insists on boosting budget recommendations. REA has so far been guided by a standard of making—or trying to make—prudent and practical loans. If Congress insists on lowering the standard to include some of the soap bubble applications, it will have to answer to the taxpayers if the payment delinquency rate climbs. As we have already noted in this department last week, the REA telephone loan payment delinquency rate is already climbing. The total number of delinquents (38) is still much too small to cause any worry as far as the REA total lending program is concerned. But if too many barriers are let down, just in order to jump

the application rate and the resulting loans approved, the day might come when REA loan delinquency could assume serious proportions.

Somewhat in contrast with the rural telephone program, REA reported recently that rural electric cooperatives plan to spend nearly 850 million dollars on new electrical facilities during the next five years. A survey showed that REA borrowers planned to spend 202 million dollars during the fiscal year beginning next July 1. They will submit applications for loans totaling 156 million dollars to help finance such construction. The REA expects to have about 185 million dollars available for rural electric loans.

REA borrowers estimated they will add new customers at a rate of 125,000 a year through 1960. They plan to spend about one-fourth of their future REA loans to improve distribution systems and about one-third for power generation and transmission facilities. REA said borrowers probably were unable to foresee now all of their construction needs for the next five years and consequently they might have underestimated their loan requirements.

New Wiretapping Bill

Following all the fuss in the New York legislature over the discovery of a "pool" of so-called "private eye" wire-tapping facilities in mid-town Manhattan, a federal bill to authorize wire-tapping has been introduced in the Congress at Washington. The new bill (H.R. 4513) is sponsored by the chairman of the House Judiciary Committee, Representative Celler (D., N. Y.). Celler's bill moves in two directions at once. On one hand it would authorize the use of evidence obtained by wire-tapping in certain types of criminal prosecutions in federal courts. On the other hand it would prohibit unauthorized wire-tapping with more stringent provisions than can be found in the present Federal Communications Act.

Celler's bill, in other words, would prohibit all wire-tapping except in compliance with the provisions of this bill. Interceptions would be permitted only by federal court order and only to obtain evidence in matters pertaining to

(Please turn to page 50)

REA APPROVES FIVE TELEPHONE LOANS

Five loans to telephone companies in four states were approved by the REA, the U. S. Department of Agriculture announced on March 1. Details of the loans, which amounted to $757,000 follow:

Richmond Dial, Inc., Richmond, Kan., was allocated $137,000 to improve and extend rural telephone service in Franklin and Anderson counties.

The borrower is now providing service to 278 subscribers over 102 miles of line. With the REA loan, the Richmond Dial company proposes to replace its central office with a new building, rebuild 68 miles of the existing line, and add 30 miles of new line to the system. These changes will make it possible for the borrower to provide dial service for the existing subscribers and to serve 91 additional rural families in the operating area. The system, when complete, will consist of 107 miles of line.

Robert L. Brown is president and manager of the Richmond Dial company.

* * *

The Citizens Telephone Co., Lexington, S. C., was granted a loan of $57,000, third loan to improve rural telephone service in Lexington county on Feb. 21.

With the earlier loans, amounting to $250,000, the borrower will be able to furnish modern dial service to 1,350 subscribers in the operating area. The system was cut over in February, 1953.

The company will use the new loan funds to expand and modify its existing plant so as to provide service without toll charge between the company's subscribers and Columbia, S. C. The completed system will consist of 143 miles of line.

Sam A. George is president and manager of the Citizens company.

* * *

Orange City Telephone Co., Winter Park, Fla., also on Feb. 21 was granted $100,000, third loan to this borrower.

These loan funds, together with prior loans in the amount of $168,000, will be used to construct a modern automatic system to serve 953 subscribers in Volusia county. Since the first loan was approved, the company has constructed a new automatic central office and headquarters building at Orange City, and is now furnishing dial service to about 350 subscribers in that exchange area. At the present time, the borrower is contemplating an additional exchange at Lake Helen if the demand requires it. The completed system will consist of 46 miles of line.

C. H. Galloway is president and J. A. Galloway is manager of the Orange City company.

* * *

Pioneer Telephone Cooperative, Philomath, Ore., on Feb. 23 was given an allocation of $90,000, third loan to this borrower.

The cooperative will use these loan funds to complete the system authorized in the first two loans.

The three REA loans, totaling $1,724,000, will make it possible for the borrower to furnish modern telephone service to 2,741 subscribers over 562 miles of line in Benton, Lane, Lincoln and Polk counties. Of the 15 proposed automatic central offices for the system, the following have been cut over to the new dial service: Alsea, Blodgett, Harlan, Horton, Kings Valley, Lobster Valley, Philomath, Summitt and Triangle Lake, and about 1,700 subscribers are now receiving dial service in those communities. The completed system will consist of 562 miles of line.

Donald B. Stokes is president and Rodney Cummings is manager of the Pioneer cooperative.

* * *

Edisto Telephone Co., Williston, S. C., on Feb. 23 was granted $373,000 to improve and extend rural telephone service in Aiken and Orangeburg counties.

The borrower, now furnishing magneto service to 266 subscribers, will use the REA loan to convert the system to dial operation and add facilities to serve 476 rural families in the area now without telephones.

About 105 miles of new line will be constructed, 27 miles of the existing line rebuilt and new automatic central offices constructed at North, Springfield and Salley. Commercial office facilities will also be housed in the building at North. The completed system will consist of 164 miles of line.

B. L. Bolen is president and manager of the Edisto Telephone Co.

Peninsular's 48 Channel MICROWAVE SYSTEM

By Marcus Donaldson*

A NEW MICROWAVE system providing 48 telephone circuits between Tampa and Clearwater, Fla., has recently been installed and placed in operation by the Peninsular Telephone Co. This is the largest group of channels transmitted over a single radio system by any Independent telephone company. Microwave was selected for this installation after a careful study was made of the different types of toll plant that could have been used to provide the required expansion service.

The new 48-channel 900-megacycle system is Peninsular's second microwave installation. A 23-channel system between Tampa and Bartow has been in service for some time. The company's experience with these two systems indicates that microwave has been the best available remedy for many of the toll plant "growing pains" which have forced very rapid expansion during the past 10 years. (The number of toll calls originated more than doubled between 1947 and 1953.) As a result of its successful microwave experience, Peninsular is now making plans to use microwave on several other toll plant expansion projects. Existing cable, microwave, and open wire toll lines are shown on the map on the next page.

[**EDITOR'S NOTE:** *The author and Peninsular Telephone Co. extend an invitation to those attending the USITA Executives' Conference in April, and to others in the telephone industry, to inspect the microwave installation described in this article.*]

Background for Microwave

The Tampa-Clearwater microwave system is the most recent toll plant expansion in the rapidly growing Tampa Bay area. In 1949, a 24-quad cable was installed between Tampa and Clearwater and then extended to St. Petersburg. This cable was initially used to provide 36 circuits from Tampa to Clearwater, 36 circuits from Clearwater to St. Petersburg, and 36 circuits from Tampa to St. Petersburg. By 1951, traffic over this cable became so heavy that a 101-quad cable was laid directly from Tampa to St. Petersburg, crossing Tampa Bay on the Gandy Bridge to provide 300 direct circuits between these two cities. At the same time the entrance arrangements of the 24-quad cable were changed at Clearwater to provide 72 circuits from Tampa to Clearwater and 72 circuits from Clearwater to St. Petersburg.

The additional circuits between Tampa and Clearwater, however, were soon swallowed by the increasing demand. Early in 1953 it was evident that a large number of additional circuits would be needed between Tampa and Clearwater by the end of 1954, and that requirements would increase still more in the future.

The decision to use microwave to expand the facilities between Tampa and Clearwater was based on both economic and operating considerations. Wire line was not considered because of its obvious inability to handle the ultimate number of circuits required at reasonable cost. In a comparison between microwave and cable, it was estimated that the 22.4 miles of cable required would cost about $4,500 more than the complete radio and multiplexing equipment, installed and ready for service. Although this price differential is not large, it was one of the several factors that influenced Peninsular to install a microwave system.

More important than cost, however, were the physical difficulties of laying cable and the better reliability of a microwave system.

The cable run between Tampa and Clearwater includes about 7 miles of causeway and bridge across the north part of Tampa Bay. This causeway consists of a cement like material dredged up from the bottom of the bay. Experience with the previous cable has shown that cable laying is very difficult along this causeway. There is also the difficulty of laying the cable through the congested residential and business districts of Tampa and Clearwater.

From an operating standpoint, it was anticipated that the reliability of a microwave system would considerably exceed that of a cable installation. Because of the proximity of the cable run to seawater along the entire route, moisture problems would be frequent. Experience on the existing cable has shown that the outage time on a per-channel-mile basis is greater for cable than it is for microwave. Microwave maintenance is almost all indoors and largely unaffected by weather conditions.

A most important factor that influenced the decision to use microwave was the ease of future expansion. Since, with microwave, growth involves only the addition or replacement of inside terminal equipment, plant expansion can be made rapidly and economically. With the Lenkurt 72B microwave equipment that was installed, the present Tampa-Clearwater system can be expanded to as many as 216 channels without additional expense for antenna

*Mr. Donaldson is chief engineer of the Peninsular Telephone Co.

MICROWAVE SYSTEM

Fig. 1. Peninsular's new central office building at Clearwater.

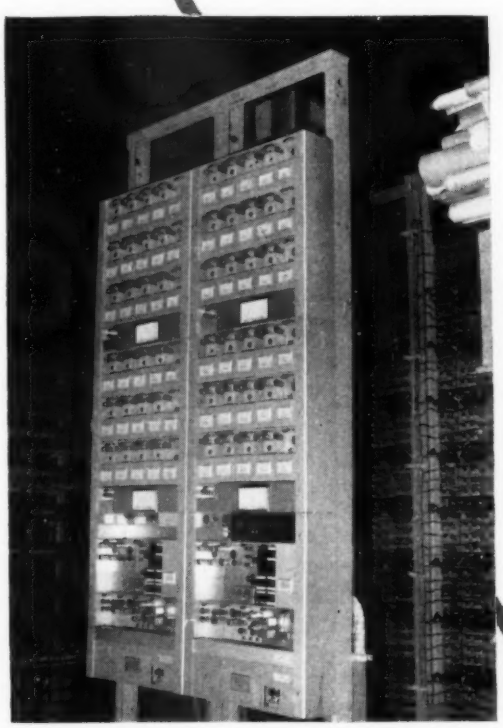

Fig. 2. Multiplexing equipment installed at Tampa.

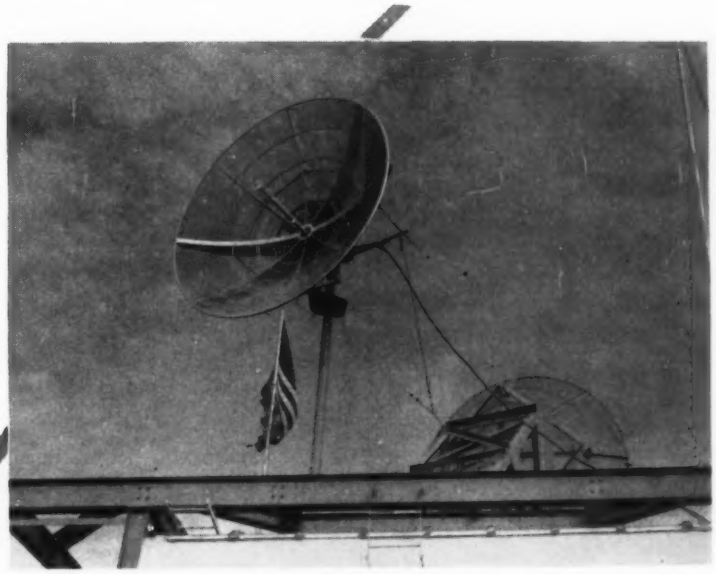

Fig. 3. Microwave antennas at Tampa. The rear antenna is for the Tampa-Bartow system.

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mountings or antenna transmission lines.

System Engineering

Once the decision had been reached to use microwave, the engineering necessary to install and place the proposed system into operation was relatively simple and clearcut. Important items to be determined included antenna heights, and the location of the radio and multiplexing equipment.

The microwave system consists of a single section about 17.5 miles in length. In order to span this distance, the 10-foot parabolic antenna at Tampa *(Fig. 3)* is mounted on a pipe mast atop the elevator penthouse of Peninsular's 12-story office building. At Clearwater, an identical antenna is pipe-mast mounted atop the new three-story central office building.

The elevation of the Tampa antenna is 212 feet above sea level, and the Clearwater antenna is 65 feet above sea level. With these elevations, a line-of-sight path is obtained between the two antennas. The only obstacle in the radio path is a 60-foot hill about one mile from the Clearwater antenna. With present antenna heights, however, there is about 14 feet clearance above the hilltop.

In the planning of the microwave system, the 60-foot hill at Clearwater was recognized as an important asset to the propagation of microwaves between Tampa and Clearwater. Since almost half of the path between the two antennas is over the northern part of Tampa Bay, the possibility of fading, caused by water reflections, was given careful attention. The 60-foot hill at Clearwater helped solve the propagation problem by providing a mask between the antenna at Clearwater and the surface of Tampa Bay. By selecting an antenna height at Clearwater of 65 feet, line-of-sight conditions were obtained between the two antennas and at the same time the surface of the bay was masked by the hill.

Another important factor in engineering the microwave system was the flexibility of the radio and multiplexing equipment. Since the radio frequencies used were in the 900-megacycle region, it was possible to connect the transmitters and receivers to the antennas with coaxial cable rather than with waveguide. This made location of the radio equipment a much simpler problem.

At Tampa, the radio equipment is located in the elevator penthouse and connected to the antenna through a 40-foot length of RG-17/U coaxial cable. The multiplexing equipment is located in the toll-test room on the third floor of the building, 10 floors below the penthouse. It is connected to the radio equipment through a Western Electric Type 720 cable.

The Clearwater equipment installation is similar except that both the radio and multiplexing equipment are located in the toll test room on the third floor. The radio is connected to the antenna through a 60-foot run of RG-17/U cable. Attenuation of the two lengths of RG-17/U cable is about 4.5 db, well within tolerable limits. This is evident by noting that the total loss permissible between a transmitter and its receiver is 177 db and that the normal space loss for this installation is about 125 db. The difference (52 db) is sufficient to allow up to 12 db loss in antenna transmission lines, and fittings and still maintain an adequate fade margin of 40 db. In this case, the fade margin is about 45 db.

In both the Clearwater and Tampa installations, the ability to separate the radio equipment from the antenna by use of coaxial cable was a great help in installation and very desirable from an operating point of view.

Provisions for Outages

A prime consideration in the planning of any new toll route or the expansion of an existing one is the maintenance of continuous communications between the two terminals. In the case of the Tampa to Clearwater route, the existing cable provides 72 circuits (48 physical and 24 phantom) while the new microwave provides an additional 48. Should either the cable or microwave go out of service, the remaining channels can handle the traffic on an emergency basis. The circuits are arranged so that the microwave channels and cable channels can be substituted for one another by using patch cords.

Future expansion plans for the Tampa-Clearwater route call for an additional microwave system to be added parallel to the one just installed. It will also be a 48-channel system with an ultimate capacity of 72 channels. When the second radio system is installed, an outage on either radio system or on the cable will cause a loss of only one-third the total number of channels between the two cities.

At the time the decision was made to install a microwave system there was some consideration given to the installation of standby radio equipment. A study of all the factors involved, however, led to the conclusion that the extra expense would not be justified in view of the reliability already inherent in the combination of cable and microwave. Also, single section microwave systems without standby have established reliability records of better than 99.8 per cent.

When traffic demands warrant the expansion, the second microwave system will be purchased and placed in parallel with the present system. Initially, at least, neither of the two microwave systems will be fully loaded (all of their channels will not be in use). The two systems will be arranged so that when one system fails, the circuits transmitted by it can be patched to unused channels of the other system. This is considered to be less complicated and more trouble-free than the use of automatic standby equipment.

In the case of trouble, both the radio and multiplexing equipment are equipped with test jacks so that bridging measurements can be made without taking the equipment completely out of service. Maintenance personnel have been trained to quickly recognize abnormal conditions so that prompt corrective measures can be taken. Out-of-service tests and major repairs of the radio or carrier equipment will be done during low traffic periods when the cable alone will easily handle the traffic.

Alarms and Supervision

All of the critical operating conditions of the radio transmitters and receivers are monitored by an alarm system at each terminal. The alarm system provides immediate visual and aural indication if operation is faulty. Among the conditions monitored are the transmitted power, voltage standing wave ratio (VSWR) and receiver signal-to-noise ratio. The CODAN unit that monitors the receiver signal-to-noise ratio also mutes the receiver output when the signal level drops below a predetermined value. Alarm conditions are indicated both at the equipment bays and at the toll test board.

Since both the Tampa and Clearwater radio equipments are manned at all times, it was unnecessary to install a system of far-end alarms.

The Lenkurt 45BX multiplexing equipment is also monitored by alarm circuits. Failure of the multiplex equipment or failure of a fuse causes a visible and audible alarm at the multiplex equipment and at the toll test board. An alarm condition in the multiplex equipment disconnects the plate voltage supply to the multiplex equipment transmitting amplifiers and sends an "off hook" signal to each channel drop.

Equipment Description

The complete microwave system includes the radio transmitting and receiving equipment at each end, the

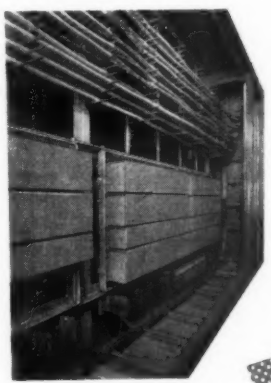
(Please turn to page 51)

need speed?

Choose Automatic's Type 31 Toll Board!

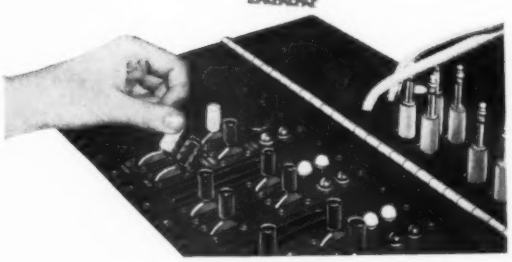
Operating companies using Type 31 find that its efficiency-boosting features are a boon in Nationwide Toll Dialing

Key-sending operation (as used in 56-position Lincoln, Nebr., installation shown) or dial operation can be provided. Pneumatic tubes can be furnished to speed handling of toll tickets, or a track-type ticket-carrying system can be used.



FAST INSTALLATION:
Type 31 is supplied in two-position, five-panel sections which are exceptionally complete and self-contained. Each line and trunk circuit mounts as a unit on the relay rack, and is wired to a self-contained terminal block. No preformed local cables needed. Simple jumper wiring connects ground, battery, and signal leads.

FAST MAINTENANCE:
Portable test set supplied enables man to check wiring and equipment balance in cord and position circuits from front of board—no need to remove rear panel. Built-in equipment allows easy testing of front and rear cords for ringing, supervision and pad control battery, plus testing of coin collect and return. Provision also made for checking dialing, key-sending, and automatic ring.



FAST OPERATION:
New twin-pocket ticket holder keeps each ticket beside the cord circuit concerned — avoids confusion, speeds ticket handling. Supervisory lamps for each cord circuit are mounted on same escutcheon as "talk" and "ring" keys—no need to look from key to jack panel. Ample key-shelf space provided for easy writing and for a work-speeding bulletin-holder and calculagraph.

Get full facts on how Type 31 Toll Board will save you money. Send for Circular 1838. *Address: Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or, call HAymarket 1-4300.*

AUTOMATIC ELECTRIC

YUM

THE PLANT MAN'S Notebook

by Ray Blain, Technical Editor

YOUR WRITER recently made an air trip out west in the interest of communications that proved a bit unusual and we think you may enjoy hearing about it.

We left Washington, D. C., one evening on an Eastern Airlines "Constellation" for Atlanta. We ran into a storm south of Charlotte, N. C., and found it a bit rough, but we arrived at our destination without difficulty and with the waterproofed little paper sack still tucked in our seat pocket as good as new.

After a day in Atlanta where we discussed communications problems with a number of engineers, including our good friend Plato Rhyne, of the Southern Bell, we boarded a Delta Airlines DC-6 for the second leg of our journey. We stopped briefly at New Orleans and then went on to Dallas. Here we boarded a Braniff Airlines "Convair" for San Antonio, Tex.

While at San Antonio we witnessed the cut-over of a Stromberg-Carlson XY dial switching system for the Signal Corps at Ft. Sam Houston. We also had a visit with our old friend, Col. Will V. Parker, retired, who formerly was associated with the North Electric Mfg. Co. We then boarded a DC-6 plane of Continental Airlines for El Paso, Tex., and went from there by auto to White Sands Proving Grounds, N. M. Located on a broad expanse of the flat desert floor in southern New Mexico, this is an isolated military installation where initial development of guided missiles may be the forerunner of man's first flight into outer space.

At this installation, the Ordnance Corps' White Sands Proving Ground, experts in physics and electronics pool their skill and knowledge with that of other top men of science to produce new weapons for Army, Navy, and Air Force personnel. The weapons tested are designed for war, but adaptable for peace.

White Sands Proving Ground, unique in many respects, is located in the great Southwest and is the only all-land rocket testing station in the United States. Selection of this site was made after a painstaking search for a sparsely-populated area large enough to launch missiles more than 200 miles into the sky with safety, where cloudless skies provided year-round opportunity for constant development, and where recovery of missiles could be made for research purposes—an advantage missing in a testing range at sea.

In the short space of nine years, since the first firing of a "Tiny Tim" rocket in September, 1945, development and testing of missiles and upper air research has been accelerated to a point where the integrated range is operated by nearly 9,000 people — civilian and military—and the public has been allowed to see a partial result of White Sands Proving Ground's accomplishments when "Nike," a fantastic anti-aircraft weapon, capable of destroying the fastest raiding bomber, was unveiled in December, 1953.

Included in this operation is a vast network of communications spread over almost countless acres of range. The White Sands Signal Corps Agency is charged with the maintenance of these many communication outlets which include telephone, radio, radar and beacon equipment. This agency is a separate organization in itself, though part of the proving ground, and is faced with the gigantic task of providing instant communication to scattered observation posts many miles apart on the range.

During our stay at White Sands we had the pleasure of observing the firing of several rockets. This was a sight which will be long remembered.

We left White Sands by automobile for El Paso, where we spent the night. We also enjoyed the novelty of an evening at Juarez, Mexico. Here, we paid $1.25 for an excellent steak and saw a good floor show in a cabaret for the minimum charge of 50 cents per person. We had to pay two cents each to get through the gate on the Santa Fe Bridge over the Rio Grande going over, but only one cent coming back. On our return, we also had to declare our United States citizenship. The Rio Grande was practically dry at this point.

Early the next morning we boarded a DC-6 plane of American Airlines for an hour's flight to Bisbee, Ariz. Here, we were met by an Army L-23 airplane for a 30-minute flight to Ft. Huachuca. This was a well-designed little five-place plane and it rode better than any automobile we have ever been in on the smoothest road.

Fort Huachuca, an old frontier Indian post originally, is situated in a beautiful location at the edge of the mountains. It has been occupied by the Signal Corps for about a year. This is also the location of the Army Electronic Proving Ground. The mission of this activity in the fields of electronic warfare, battlefield surveillance, Signal Corps aviation, meteorology and related activities, is to perform the necessary technical and engineering tests and evaluation of communications and electronic systems and equipment. Operational research, experiments and field tests of communication equipment and systems, also is conducted here.

After spending two most interesting days at Ft. Huachuca, and having a look at "Boot Hill" near Tombstone, Ariz., we boarded an L-20-B Army plane for a flight of about half an hour to Tucson. Here we boarded an American Airlines DC-6 for a trip to Phoenix. We spent the night at a hotel and had a look at the downtown section of the city. A check of the telephone directory indicates that they have a Ray Blain listed. We can claim no relation, however.

The following day we boarded a TWA "Constellation" for an hour-and-a-half flight to Albuquerque, N. M. Here we spent two interesting and busy days with the fine communicators at Sandia Base. While here we also found time to take a quick drive up to Santa Fe, the capitol of the state and a most interesting old town.

(Please turn to page 52)

Good news for Independent Telephone Companies! Now you can

Modernize and Simplify Your Accounting

at a lower cost than ever before!

Now you can use the *low-cost* modern method of simplified accounting, ideally suited for both small and large companies—Burroughs Micro-Accounting. This flexible method can be tailored to fit specifically your volume, your particular needs and your budget. Using the Burroughs Sensimatic Accounting Machine and the Micro-Twin microfilm recorder-reader, you can streamline your company's accounting and record-keeping operations:

- By eliminating the copying of information from one record to another.
- By saving form costs and time of duplicating posting operations.
- By eliminating the need for writing descriptive invoices.
- By assuring positive control over cash receipts and disbursements.
- By converting 99% of present filing space into additional work area.

1. Burroughs Sensimatic Accounting Machine

Put all your revenue and general accounting on the Sensimatic. Just turn the knob to change the job! You'll do every operation at a saving —as quickly and automatically as a specialized machine could do it!

2. Micro-Twin Microfilm Recorder-Reader

Then quickly make exact photographic records of toll tickets, bills, cash receipts, and any other vital documents with the Micro-Twin microfilm recorder-reader. Saves cost of duplicate forms, repeated operations, filing and searching time. Reduces filing space 99%.

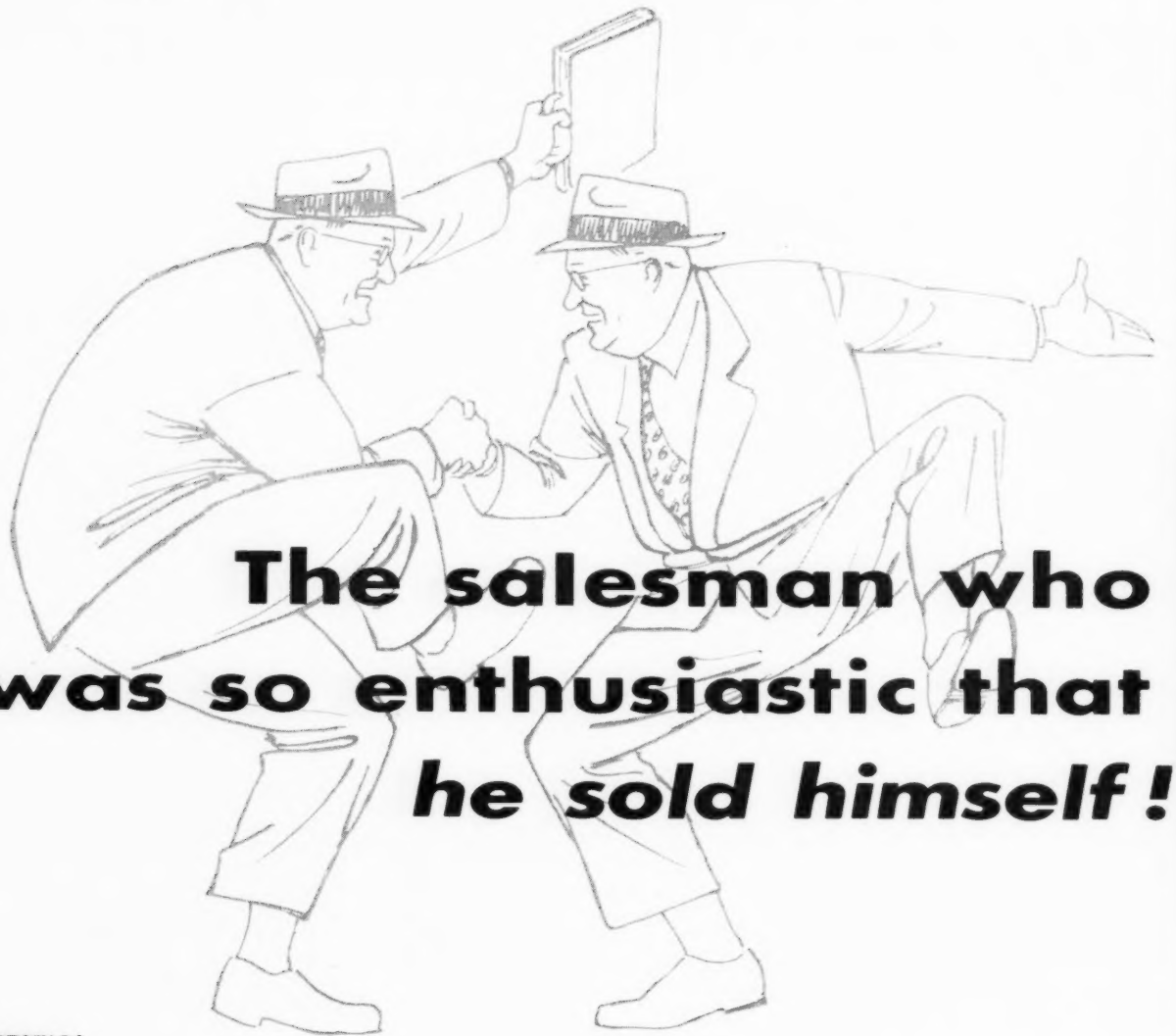
Whatever the size of your company, Burroughs Micro-Accounting can help reduce the cost of accounting and increase your protection. For information and a demonstration, get in touch with our local branch office. Or write Burroughs Corporation, Detroit 32, Michigan.

WHEREVER THERE'S BUSINESS THERE'S **Burroughs**

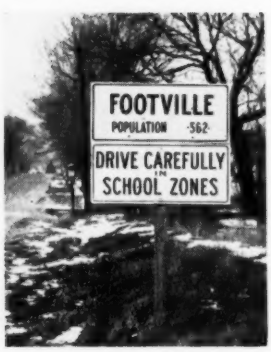
Burroughs B

"Burroughs" and "Micro-Twin" are trade-marks

XUM



The salesman who was so enthusiastic that *he sold himself!*



If you ever are near Janesville, Wisconsin, drive about eight miles west to the little town of Footville. Stop in at the Footville Telephone Company office and tell them you want to look at the neatest, slickest Leich Dial System installation you've ever seen.

You'll be very cordially welcomed. For the President of the Footville Telephone Company happens to be Mr. Don Kratz. And . . . Mr. Kratz also happens to be a salesman for Leich in the fair state of Wisconsin.

It's an interesting story: Don purchased this little magneto exchange (286 stations) in 1939.

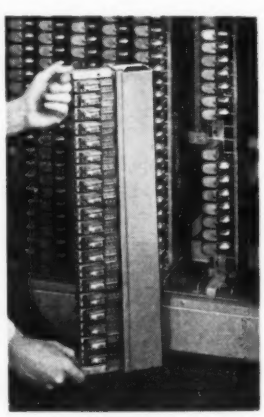
In 1948 Don saw a demonstration of the then new Leich Dial System. He was greatly impressed and in 1949 he started working as a salesman for Leich. He left the day-to-day management of the Footville exchange in the hands of the very capable Mrs. Kratz.

Up and down the state he went, telling telephone folks of this better, more practical Leich Dial System.

He told, how it was that the all-relay operation made it dependable while requiring a minimum of maintenance. He showed these telephone folks that this was a more simplified dial system, how they could very easily learn to maintain it themselves.

One of the most important features that Don told about the Leich Dial System was the ease and economy of making additions. He told how you could add lines and even links by merely jacking them in on the switchboard in a matter of minutes.

Don sold Leich Dial Systems too. He helped his customers with their conversion plans and at cut-over time he was just as nervous and excited as they were.



LEICH

FOOTVILLE, WISCONSIN — *Don Kratz, President and General Manager of the Footville Telephone Company explains his Leich Dial System to W. L. Snyder and John Doherty, employees of the Footville Co.*

Finally, the dial bug bit Don Kratz himself. He saw how those he'd helped were giving better service, eliminating the operator problem, getting higher rates and increasing the value of their companies through their installations of Leich Dial Systems.

So he rebuilt his outside plant and on December 16th at twelve noon the town of Footville was cut over to dial service.

The 3-bay, 180 line Leich Dial System is housed in a neat new building behind the old telephone building which is now used for a business office. He now has 500 stations. He expects more and will probably invite several prospective customers over to show them how he can add ten lines in ten minutes.

HOW ABOUT YOU? *For small and medium sized exchanges the Leich Dial System offers exclusive, practical advantages that make it the most sensible investment you can make. We'll be delighted to quote you and tell you how a Leich Dial System will work in your exchanges. There's no charge or obligation. Write today.*

MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907
LEICH SALES CORPORATION 427 W. RANDOLPH STREET CHICAGO 6, ILLINOIS
SOUTHWEST: 1227 SLOCUM ST., DALLAS 7, TEXAS PACIFIC COAST: 2611 SAWTELLE BLVD., LOS ANGELES 64, CALIF.

GENERAL SYSTEM

The OPERATOR'S CORNER

by MAYME WORKMAN, Traffic Editor

AS THIS article is being written, I am reminded that we have recently celebrated the birthdate of the Father of our Country—George Washington. My thoughts drift back to my visit to Mount Vernon, his home, where I strolled through the beautiful grounds surrounding the home, enjoying the peace and quiet, after a hectic day of appearing as a witness before the Wage and Hour Division in Washington.

February, our shortest month, and very often the coldest, is a month of blizzards, of famous birthdays, of valentines, and of the fabled groundhog with his Shadowy Predictions. February tingles the ears, the fingers, the toes, and quickens the pulse. It puts bloom on the cheek. It is the month of great men—Washington and Lincoln. It is an important month.

George Washington, the founder of our country, was a brave and heroic gentleman, as were his followers, those cold and tattered soldiers who gave their all for their country.

Every organization must have a leader, a person of courage and integrity, to make the organization grow and prosper. This is just as true today as it was in the days of Washington. There must be a will, as well as willingness, to accomplish the things that are vital to the success of the organization.

There is a vital difference between the willingness to try a thing and the sheer "will" that vows it will do a thing. Willingness admits that defeat is possible, whereas "will" does not consider the possibility of failure.

A great leader once summoned a subordinate and assigned a difficult task. "I'll do my best, sir," said the young man.

"I don't want you to do only your best," replied the leader. "I want the job accomplished."

"I'll do it or die, sir," said the youth.

"I don't want you to die," again countered the leader. "I want you to complete this assignment."

"All right, sir, I'll do it," came the answer from a subordinate who now had been fired with a will that was more than mere willingness to measure up to the task committed to him.

George Washington and his loyal soldiers were fired with a will, a will to accomplish their task and, if they had faltered, I often wonder what the outcome might have been.

It takes more than willingness on the part of an operator to accomplish her daily tasks. She, too, must be imbued with the will to make a success of her job and to make her service pleasing and adequate for her customer's needs despite any obstacles that must be surmounted.

A chief operator and her service assistants must have a will to accomplish their daily tasks, pleasantly and efficiently, in accordance with the company's desires and objectives.

We all wish to measure up to the tasks committed to us but we can only achieve this desire by having the will to perform these tasks.

There are times when we fall short of our objective, but we must not become discouraged, we must begin again.

BEGIN AGAIN

Things that are worth the winning
Must ever at cost be won;
A feeble wish can accomplish naught,
And sees no great thing done;
They that are wise press onward,
Those that are strong ascend;
So be not stilled by a great defeat,
But begin again, my friend.

What is a fall or a failure,
But a call to try again?
Have some short roads to success been closed,
There are others that still remain;
Therefore be yet bravehearted,
And faithful to reach the end,
The crown was best that was hard to win;
So begin again, my friend.

It isn't the smooth sea that makes a skillful mariner, and it isn't the operator who handles a normal load successfully who makes the most skillful operator.

Traffic Questions

(1) When word has been left on a call, does the TX operator always reach the calling telephone before making a subsequent attempt to determine if the calling party is ready to have his call tried?

(2) On an address name call, should the operator ask the calling party if he would like to make a note of the called number?

(3) On an address name call, upon being given a BY, or DA report, if the calling party does not request that further attempts be made, should the operator furnish the called number?

(4) In reaching the called telephone, if you receive a report of OD, how should you proceed?

(5) Is an operator permitted to give an untrue report if requested to do so by a customer?

Answers are presented on page 52.

V V

R E. Coffman of Ohio Named to USITA Traffic Committee

Robert E. Coffman, general traffic manager of General Telephone Co. of Ohio, Marion, has been appointed a member of the Traffic Committee of the United States Independent Telephone Association.

Mr. Coffman, who has been affiliated with General of Ohio for nine years, will participate in the study of special problems pertaining to traffic and the improvement and standardization of traffic operations of Independent companies. He was appointed to his new post by Donald H. Campbell of Rochester, N. Y., president of the United States Independent Telephone Association.

Mr. Coffman is also engaged in similar activities in the Ohio Independent Telephone Association Traffic Committee, serving now as secretary and formerly as chairman.

MINNESOTANS FIGHT

Increase in Gross Earnings Taxes

By R. C. RENO

ALL PREVIOUS attendance records for Minnesota telephone conventions were shattered at this year's meeting as 710 delegates registered for the 46th annual conclave of the Minnesota Telephone Association, held in St. Paul on Feb. 14, 15 and 16.

The convention served as a kick-off for the industry's opposition to a proposed increase in the gross earnings tax levied against telephone companies in Minnesota.

The governor of Minnesota has proposed that the tax be increased from 4 to 7 per cent for telephone companies operating in communities under 10,000 population, and from 4 to 5 per cent in communities of over 10,000 population.

Association President Harold R. Bollinger of Waconia, in his annual address, scored the governor's proposal and stated it would result in "wholesale requests" for rate increases in Minnesota.

"The people must be told that raising gross earnings taxes on small telephone companies would be extremely unwise and unfair. Subscribers of these exchanges are already carrying a bigger tax load than patrons of any other utility."

"Since most small Independent companies serve in exchanges under 10,000, this proposal aims directly at them," he added.

"Our industry is faced with a double-barrelled dilemma. First, we apparently may have to seek higher rates to meet wage increases because of the proposed increased federal minimum wage. Then, should the state gross earnings tax increase be approved, a further adjustment would be necessary.

"The result might well be that telephone service would be priced out of the reach of patrons in rural areas and smaller communities."

Mr. Bollinger emphasized that telephone companies are not in position to absorb either the proposed higher gross earnings tax or the added payroll costs of higher minimum wages.

"Many telephone companies are 'just getting by' now," he said. "A lot of them don't even come close to making what is considered a 'fair return' on their investment."

Mr. Bollinger pointed out that proposed increased taxes and payrolls also would hamper modernization and expansion programs of smaller companies. There is danger, he said, that sources for obtaining capital improvement funds "will close the doors to us completely if our earnings pictures drop off any more."

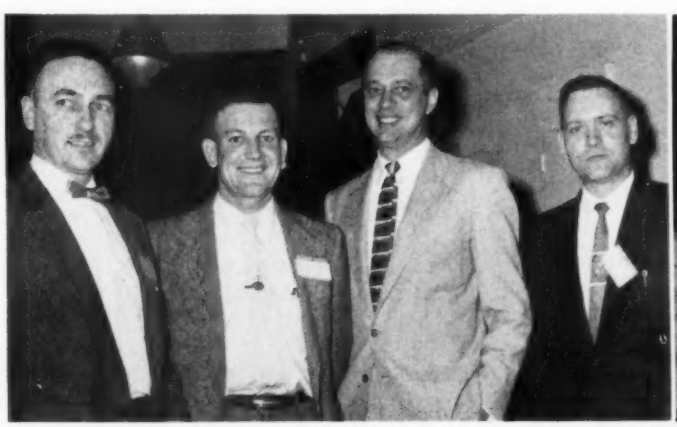
Ray W. Smith, editor of *Telephone Engineer*, followed Mr. Bollinger on the program and addressed the convention on the subject "In the Busy Days Ahead."

He urged telephone company managers to become good citizens in their communities and to merchandise telephone service.

"This marks an important departure from the old concept that all the telephone company has to sell is local and long distance service," Mr. Smith said.

"A telephone merchandising program is not limited only to gaining telephones and extensions. It also sells higher grades of service, special cords, colored telephones, special apparatus for meeting particular needs of the subscriber, and various other applications of service."

(Please turn to page 34)



Left photo: GEORGE STREUBENS; BOB BERNKE of Freeborn, Minn.; WALDEN PIEHN of Harmony, Minn., and BOB KOLBENSRICK. Right photo: G. E. ROHE of Waterville, Minn.; GEORGE SUMMERSCALES of Automatic Electric Sales Corp., and GEORGE HAMBURGER of Copperweld Steel Co. All Minnesota convention photos taken for the Minnesota Telephone Association by P. M. Ferguson, Jr., of Mankato, Minn.

XUM

Less time from order to shipment: that's the new rule on orders for Strowger Automatic Type 11 M-A-X. It's mighty welcome news to small-exchange men everywhere!

Now—

Fast Shipment

on Strowger Automatic Small Exchanges!

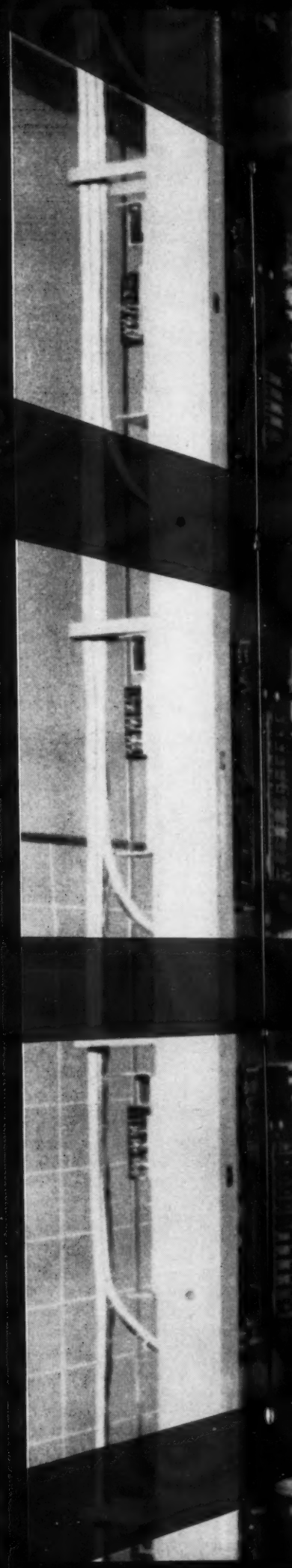
Want modern, big-city service in your small exchange? Want to do away with high operating costs? To these problems, more and more telephone men are finding the same answer: modern, simple, economical, Strowger Automatic Type 11 M-A-X!

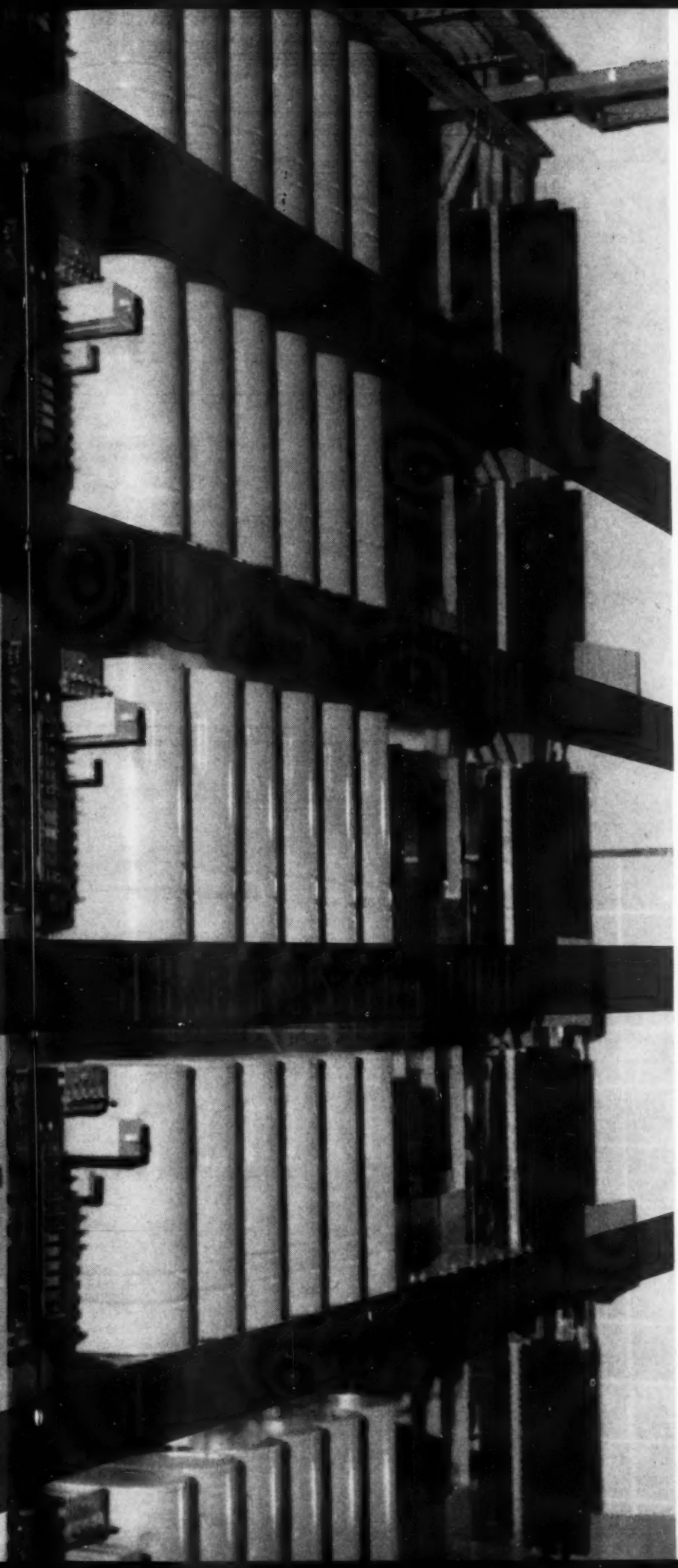
Range of capacities on Type 11 M-A-X runs from 80 to 400 lines, with ultimates of 200 to 600 lines on a terminal-per-line basis (or up to 2000 stations on a terminal-per-station basis). They're engineered to meet your specific needs, yet can be delivered in a matter of months.

Strowger Automatic Type 11 M-A-X is compact, saves space. It offers exceptional flexibility in trunking arrangements. It meets the highest service standards, plus all requirements of the nationwide toll dialing plan. What's more, it's the most economical equipment you could buy: you can order just what you need now, then add more as your business grows:

The men who own Type 11 M-A-X's will tell you how it stays trouble-free, saves money, builds earnings. Write today for a list of owners and a helpful consultation. Address: *Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or, call HAymarket 1-4300.*

AUTOMATIC ELECTRIC





Why Gamble?

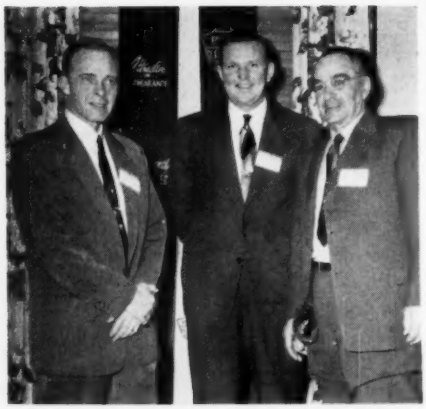
IDEAL FOR TODAY'S CHANGING NEEDS: Simple circuits and "unit" construction enable Strowger Automatic to adapt easily to any service you require.

MEETS TODAY'S NEED FOR LOW-COST MAINTENANCE: Easy-to-understand mechanical operation, easy-to-follow circuits speed maintenance — an important economy under present-day conditions.

TAKES TODAY'S EXPANSION IN STRIDE: New factory coming to town? New subdivision going in? Merely jack in more switches—and you're set!

GEARED TO TODAY'S DEMAND FOR SPEED: Ringing cycle starts when dial stops after last digit. No local switching operation could possibly be faster!

INSURES THE SECURITY TODAY'S INVESTORS DEMAND: Over half-a-century of experience proves that Strowger Automatic is low on maintenance — unequalled for dependability and long life.



Left to right: F. FRANCIS and V. R. HUFNAGLE of Page & Hill, Inc., and BILL SALTMARSH of Annandale, Minn.

He said that, barring another war, the nation is heading into a period of prosperity and increased population which will present a great challenge to the telephone industry to keep up with service demands.

"Two basic elements promote the growth of the industry. One is, naturally, increases in population. The other is the constant increase in the number of telephones used per 100 of population. The number of telephones that will be required to serve the estimated 190 million population in 1965 is anybody's guess," Mr. Smith said.

Minnesota ranks second in the nation only to Texas in total REA funds loaned for rural telephone expansion, E. C. Weitzell of Washington, D. C., chief of the Telephone Operations and Loans Division of the Rural Electrification Administration, told the convention.

Mr. Weitzell said that in 1954 loans totaling nearly 5 million dollars went to 12 borrowers in Minnesota. Since the rural telephone loan program began, following congressional action in 1949, a total of $15,544,000 has been loaned to 22 companies in Minnesota, out of 208 million dollars loaned to 309 borrowers in the nation as a whole.

Mr. Weitzell told the delegates that "REA is not interested in obtaining control of management or in exercising any controls over companies other than those that are absolutely essential" to secure loans and assure profitable operations.

"In order to advance the progress of rural telephony, the REA loan program has been provided to facilitate smaller Independent companies in doing a job that is essential to the soundness of our economic and social structure," he said.

Major interest of the opening session of the convention also centered on the special recognition luncheon honoring four Minnesota telephone industry veterans. These included T. C. Macoubrey, A. N. Fancher and E. L. Klingle, all of St. Paul, and Jay Houghtaling of Minneapolis. A fifth person who was to have been honored, J. C. Crowley Jr., former secretary-treasurer of the association, died the week preceding the convention.

Mr. Macoubrey has headed a St. Paul accounting firm which has specialized in telephone work since 1920. Mr. Fancher has been supervisor of telephones for the Minnesota Railroad and Warehouse Commission since 1929. Mr. Klingel heads a telephone repair and supply business which has served Minnesota Independents for many years. Mr. Houghtaling is a retired sales engineer for Kellogg Switchboard & Supply Co., which position he held from 1917 to 1948.

The second day's program was opened by the report of the association's secretary-treasurer, Keith W. Vogt.

Eighty per cent of Minnesota's rural and small city telephones served by Independent companies will be converted to automatic operation by 1960, Mr. Vogt predicted in commenting upon present and proposed improvement and expansion of such companies.

Left to right: MRS. DELL LADENIA and MR. and MRS. JOHN BALDER, all of Osakis, Minn.

Explaining his prediction was based on the assumption that there would be no general hostilities in the world, with resulting shortages of telephone equipment, Mr. Vogt said the shift to dial telephones would be hastened by proposed increases in minimum wages, with resulting higher labor costs; plans for nationwide inter-toll dialing; and the likelihood that customer direct long distance dialing will be in effect within a few years.

"As of today, just under 75,000 of the 217,000 telephones served by Minnesota's Independent companies are dial operated. By 1960, nearly 80 per cent of those 217,000 telephones will be dial," he said.

The association secretary reported that during 1954, 31 Independent exchanges, serving 9,994 subscribers, converted to automatic. Another 4,917 Minnesotans received service for the first time as result of telephone company expansion and modernization programs.

Currently, he added, there are now 183 Independent automatic exchanges in Minnesota. The state's total number of telephones, he said, is 1,032,143, including those served by Northwestern Bell.

"Each of these added telephones, at today's prices, costs about $400 to install, taking into consideration the additional plant, cables, wires and equipment needed," Mr. Vogt said. "Therefore, companies must earn a fair return on their invested plant and equipment if their expansion and modernization programs are to continue. Companies cannot otherwise attract the necessary outside capital investment funds."

He pointed out that telephone companies, as utilities, "have a responsibility to maintain good service, and to expand their systems to take care of new subscribers."

"With some assurance that our heavy tax burden will not be further increased; with assurance that telephone companies will be permitted to earn a fair return on their investment; and with assurance that our costs of operation will level off, it can safely be said that telephone companies will continue their progressive steps to improve service," he concluded.

One of the features of the program was the showing of a motion picture on deep grounding with Copperweld sectional ground rods. The film was presented by George Hamburger of Copperweld Steel Co.

Walden E. Piehn, president of the Harmony (Minn.) Telephone Co., presented one of the most enlightening and helpful addresses to small telephone companies when he told of steps taken in the program of converting the Harmony exchange to automatic opera-

Left to right: LOUIS WAGNER of Mankato, Minn.; V. C. BURCHITT of Stromberg-Carlson Co., and BARNEY RIVERS of Mankato.

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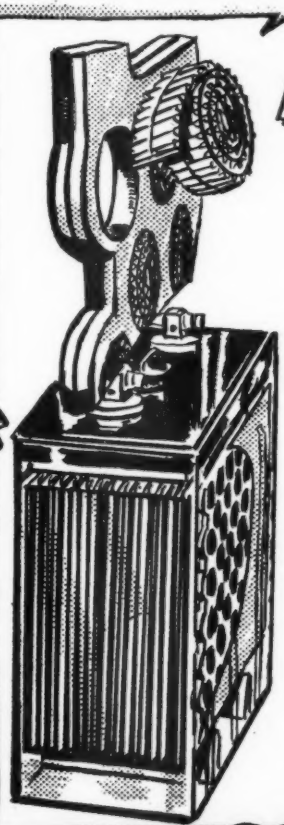

BUTTONS OF LEAD MEAN LESS COST FOR YOU

THE IMPROVED PLANTÉ TYPE POSITIVE PLATES OF THE EXIDE-MANCHEX BATTERY ARE OF THE MANCHESTER DESIGN—AN EXCLUSIVE EXIDE FEATURE. BUTTONS OF LEAD DELIVER THE POWER YOU NEED, WHEN YOU NEED IT. OVER A HALF CENTURY OF DEPENDABLE PERFORMANCE IN TELEPHONE BATTERY SERVICE HAS DEMONSTRATED THAT EXIDE BATTERIES WITH THEIR BUTTONS OF POWER ARE YOUR BEST POWER BUY—

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HAVE EXPERIMENTED WITH THOUSANDS OF BATTERY IDEAS. THE RESULT IS THE HIGH QUALITY EXIDE-MANCHEX BATTERY SO WIDELY USED BY TELEPHONE SYSTEMS THROUGHOUT THE U. S.

LET EXIDE HELP SOLVE YOUR TELEPHONE BATTERY PROBLEMS. ❶ CALL AN EXIDE SALES ENGINEER FOR FULL DETAILS. ❷ WRITE FOR FORM 4993, A TELEPHONE BATTERY ENGINEERING AND MAINTENANCE MANUAL.

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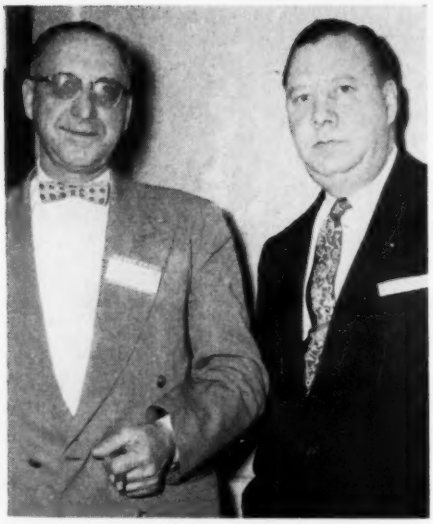


A. G. STRADTMAN (left) of St. James, Minn., and RAY JOHNSON of Graybar Electric Co.

tion and in working with switch-line subscribers in rebuilding their facilities. His address will be presented in full in a future issue of TELEPHONY.

"Switched Lines — Objective 1955" was the subject of an address by V. F. Bellows of Blair, Neb., general superintendent of the Hunt Telephone Properties. Mr. Bellows urged all Independent companies to get their plants up to standard, to adequately train their employes and to get their records and operations in proper shape so that they can attract outside financing for improvement and rehabilitation.

He then dwelt at length upon the need for Independents to help switch-line companies rehabilitate their facilities to conform with improvement and expansion programs of the commercial companies. He said:

"Switched subscribers are like any other telephone users. They want good service and are willing to pay a fair and reasonable price for it. But they need encouragement and help to accomplish this.

"The 1955 objective should be to make all lines metallic and this can be done through cooperative effort of subscribers and help from telephone companies.

"Company or association people should hold meetings with switching subscribers and tell them what should be done to improve service and how much it will cost. Usually it is cheaper to replace entire plant than to repair existing facilities."

Mr. Bellows emphasized that switch-line service plays a very important part in the provision of rural telephone service in any state. This type of service, he said, is vital to the telephone industry and there should be organized effort to promote a complete rebuilding and modernization program with switch-line companies if they are expected to remain in business. His address will be published in full in a future issue of TELEPHONY.

"Management is of vital interest to every employe of a telephone company, as he either is subject to it or a part of it," L. D. Densmore of Lincoln, Neb., vice president and general manager of the Central Telephone Co., said in an address on "A Few Observations With Respect to Management."

If an employe is not a part of management, Mr. Densmore said, he will look for an opportunity to be. No matter how small a part of management he may have, there is always the hope and possibility for a greater one, he observed.

"Anyone who has the responsibility for, and makes decisions affecting any part of, the operations of a business and includes in that the work of persons other than himself, is a part of management," he said.

Mr. Densmore then gave the following 10 important qualifications of an executive or manager:

(1) Integrity.
(2) Ability to get along with others.
(3) Intellectual ability.
(4) High degree of identification with the company.
(5) Firmness.
(6) Ambition.
(7) Frankness.
(8) Objectivity.
(9) Health.
(10) A happy home.

Mr. Densmore said there is the greatest need for the following eight personal qualities and abilities in management:

(1) An interest in and understanding of people.
(2) A necessary personal strength.
(3) Initiative or the will to action.
(4) Use of common sense or good judgment.
(5) An inquiring mind.
(6) An understanding of business procedures, purposes and relationships.
(7) Thinking objectively.
(8) Thinking that is grounded in general principles and fundamental laws.

BOB HEATER (left) of Minneapolis, Minn., and ARTHUR RUDLOFF of Lake Crystal, Minn.

GORDON BROWN of Enderlin, N. D., and K. C. TOMPERS of Kellogg Switchboard & Supply Co.

A vivid demonstration of scientific developments which could revolutionize the nation's communication systems, was presented by R. Karl Honaman, director of publications for Bell Telephone Company Laboratories in New York City, who used an impressive array of equipment to demonstrate, among other things, the Bell solar battery which converts the sun's energy into electrical power.

He operated a telephone line with the energy, ran an electrical pump and activated a loudspeaker.

Mr. Honaman also demonstrated tiny transistors capable of operating a telephone dial system in millionths of a second. He said it is conceivable that these basically new devices, because of their small size, heat-free operation and ruggedness, can be packed so closely together that an entire 10,000-line telephone central office may some day be housed in one room.

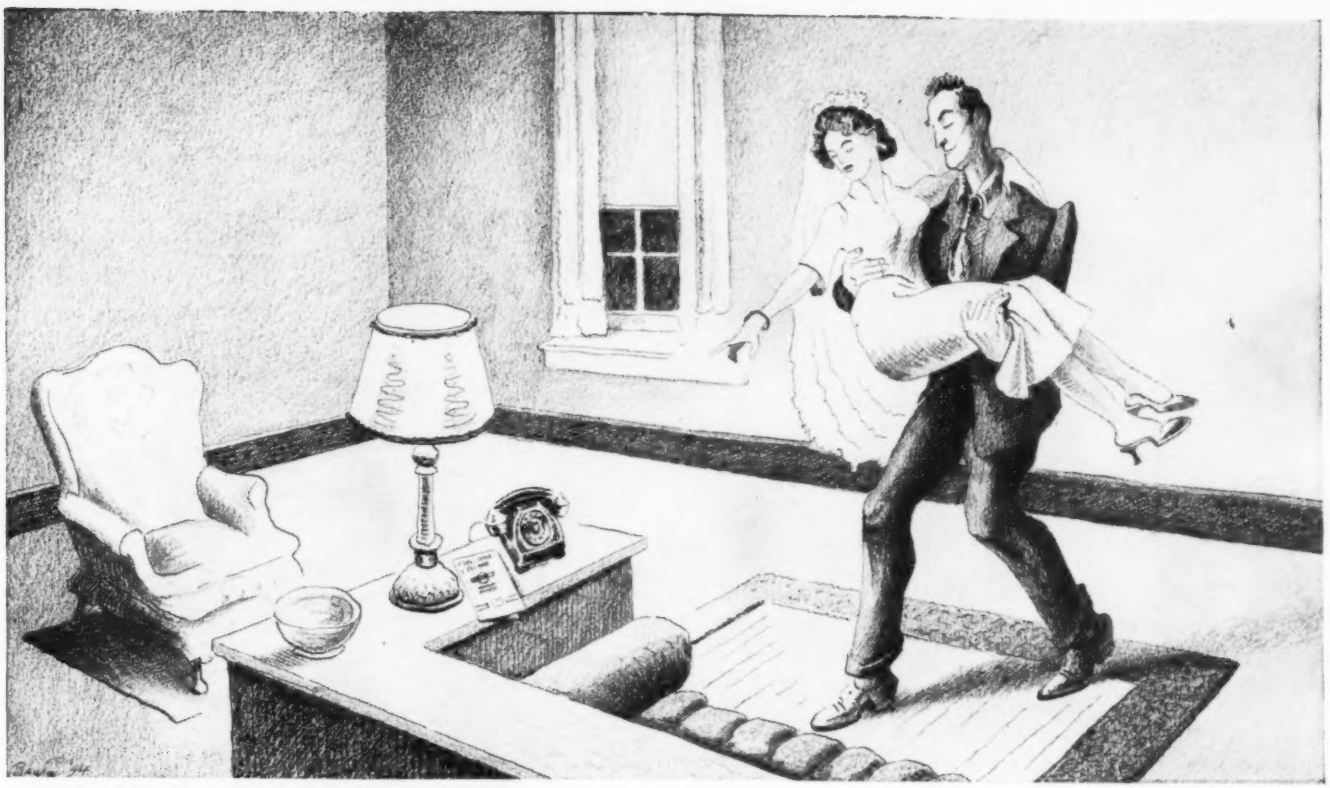
Discussing the solar battery, Mr. Honaman classified this as a "solid state physics" device discovered by a team of three men—a physicist, chemist and electrical engineer.

"These men pooled their talents in a deliberate effort to find a means of directly converting the power of the sun into usable electrical energy," he said. "The Bell solar battery is new, and like a newborn baby, its values are in its promises for the future."

"Power from the sun, machines that solve problems in millionths of a second, and thimble-size electronic devices that do the work of much larger conventional electrical equipment — these are some of the building blocks of tomorrow's communications systems," he said.

T. P. Hultkrans, manager of Harfil, Inc., St. Paul firm which provides billing services to small telephone companies, discussed the need for telephone

(Please turn to page 53)



FIRST TELEPHONE

BY Thomas Hart Benton

When the new telephone is installed, the newlyweds *know* they have set up housekeeping.

With every telephone goes a directory to be worn threadbare by the time a new one is issued. New subscribers can find thousands of uses for the traditional American guide to better living.

From association with our clients, we know that telephone men are dedicated to public service. Nothing distresses them more than inability to provide complete service to new subscribers.

The Loomis Advertising Company believes a well developed directory is a major step in rendering complete telephone service.

When you turn over to Loomis Advertising Company the many irksome details of building a modern telephone directory you gain in two ways. You have a directory that is second to none in appearance, utility and revenue. You free personnel to do what they can do best—provide telephone service.

You're invited to get further details of Loomis' complete telephone service—without obligation on your part. Just call or write the Loomis office nearest you.

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683 cities and towns in 19 states are served by 231 Loomis-built directories.

We have commissioned Mr. Benton to draw four scenes of American life. A limited edition of 9 by 15-inch prints suitable for framing has been ordered. We think they offer a nice public relations touch to telephone office decoration. To get your Benton print FREE, write Wesley H. Loomis III, 810 Baltimore, Kansas City 5, Mo.

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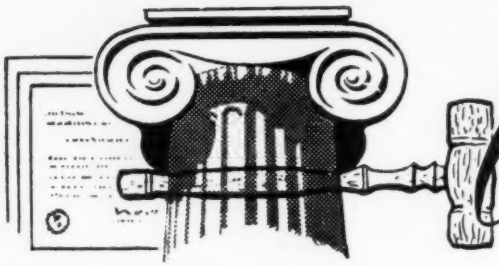

Courts and Commissions

Claims Texas Exchange Rates Force Operating Loss; Sues

General Telephone Co. of the Southwest, San Angelo, Tex., has filed suit for an injunction to prevent enforcement of an Eden, Tex., city ordinance on telephone rates after the company was refused a rate raise last September by the Eden city council.

Filed in 119th District Court in Paint Rock, Tex., the suit was set for hearing Mar. 3. The old ordinance was enacted in October, 1952.

General's petition asserts the effect of the enforcement of the rate schedule set by the ordinance is to require the company to furnish local exchange service at Eden at a net operating loss. The petition includes five exhibits, one of which shows loss for the year ending Sept. 30, 1954, to have been $671.87.

The increases asked for by the company in most cases were 100 per cent.

They include:

	Present	Refused
One-party business	$5.50	$10.50
Two-party business	4.00	8.50
One-party residence	3.50	5.25
Two-party residence	3.00	4.25

Pointed out in the company's petition is the refusal of the city council to grant the raise "after the company had shown it was furnishing service at less than a fair return upon the fair value of its property devoted to the public service."

V V

W. Va. Commission Grants 65% Of Requested Increase

The West Virginia Public Service Commission recently granted rate increases to the Central Telephone Co., Charlottesville, Va. (TELEPHONY, Sept. 4, 1954, p. 31).

The company had requested a rate increase that would yield an income of $92,319. The commission however lopped off about 35 per cent of the requested increase, and allowed a new rate structure which is estimated to increase company revenue during the next year by $60,148. The new figure will permit the company to realize an estimated 6.25 per cent return on its investment.

In addition to the general rate increase, the commission also increased the rate on paystation calls from five cents to 10 cents.

V V

Illinois Commission Agrees to Reconsider Independent's Rates

Reconsideration of its order granting the Northwestern Telephone Company a $244,000 annual rate increase in Freeport and vicinity was ordered recently by the Illinois Commerce Commission (TELEPHONY, Jan. 15, p. 31).

The commission allowed petitions for rehearing filed by the telephone company, which sought a $305,000 raise, and by Freeport, and the villages of Cedarville and Lena.

The company argued it has placed into effect wage raises that cost $59,000 a year, and that the firm should be entitled to the full $305,000.

V V

Massachusetts Governor Signs Party Line Emergency Use Law

Gov. Christian Herter of Massachusetts signed a law on Mar. 1 which will punish those who wilfully refuse to yield the use of a party line to another person to permit him or her to report a fire or to summon police, medical or other aid in case of emergency (TELEPHONY, Mar. 5, p. 31).

The law declares that any person who shall ask for the use of a party line on pretext that such an emergency exists, knowing that it does not, also shall be guilty of a misdemeanor, punishable by a fine of not less than $50, nor more than $500.

Every telephone company doing business in Massachusetts is required to print a copy of this act in a prominent place in each telephone directory published.

V V

Indiana Emergency Party Line Use Bill Sent to Governor

Persons failing to yield a telephone to emergency calls on a party line should be liable to a fine or jail sentence, the Indiana senate agreed on Mar. 4 (TELEPHONY, Jan. 29, p. 44).

The house-passed bill, providing for fines up to $25 and a 10-day jail sentence, was approved 42 to 1 and sent to the governor for final action.

Any person using an emergency plea as a ruse to make a routine call would be liable to the same fine and jail sentence, the bill stipulates.

V V

Emergency Party Line Use Bill Passed by Arizona Legislature

A bill making it illegal for persons on party telephone lines to refuse to yield such lines for emergency use was given final passage by the Arizona Legislature on Feb. 22 and sent to the governor for signature (TELEPHONY, Mar. 5, p. 31).

The measure would make such action a misdemeanor, and would require that the law be set forth in all telephone directories in the state.

V V

New York Company Gains Ruling On Foreign Exchange Service

The New York Public Service Commission on Mar. 1 approved a revision in intercompany foreign exchange service rates filed with it by Cazenovia Telephone Co. (TELEPHONY, Jan. 29, p. 25). The new Cazenovia rate is expected to become a pattern for similar tariff changes by other companies now providing such service. The effect thereof will be very limited, however, since only about 150 persons throughout the state now subscribe to the "luxury service" involved.

Intercompany foreign exchange service is that rendered by one company to a resident of an area served by another telephone company. Under Cazenovia's present rates, a monthly charge of 60 cents per each tenth of a mile of line between the boundary of the serving company's territory and the point of actual service is prorated among those receiving foreign exchange service. Bills are rendered by the company serving the territory in which the subscriber resides and payments are divided between the serving company and the billing company on the basis of services rendered and equipment supplied by each.

Under the new tariff, the mileage rate

"Lenkurt's new '45 Carrier Concept' can really cut our capital investment!"

"These Lenkurt people have an idea—a *big* idea they call the '45 Carrier Concept'." It sweeps away once and for all the notion that interconnection between carrier systems used on open wire, cable, and radio must be on a voice frequency basis. It eliminates the need for a complete terminal at each junction to convert from carrier to voice frequencies and back again. This concept is the foundation of Lenkurt's new 45-class Carrier Systems: *interconnection at carrier frequencies!*"
Let's look at the advantages:

1. *Economy:* Many modulating and demodulating steps eliminated, with consequent big savings in equipment.
2. *Flexibility:* In engineering complete toll systems, you can use the facilities which are best adapted for each part of the route and still keep your equipment cost economically low.
3. *Performance:* Reduction in modulating and demodulating steps removes many sources of distortion.

Two 45-class systems are now available: the 45A (12-channel, open wire), and the 45BX (48-channel, radio). The 45B (24-channel, cable) will be available soon, and other systems are under development.

Send today for helpful literature on 45A, 45B, and 45BX. *For the toll plant engineer:* All 45-class systems use the same, two-stage modulating plan. In the "pre-group" stage, four channels are placed in the 8-24kc range; in the "base-group" stage, three pre-groups (12-channels) are placed in the 40-88kc range. Since all 45-class systems use these same frequencies, they can be interconnected at the "pre-group" and "base-group" stage.

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Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems

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will be 90 cents per tenth of a mile to subscribers having individual lines and 30 cents per tenth of a mile to subscribers having party-line service without regard to the number served by the line involved. The effect of this change will be to increase costs to some subscribers and reduce them for others. In addition, the billing company, in this case Cazenovia Telephone, will be allowed to charge $1.00 monthly to cover administrative costs.

The change in intercompany foreign exchange service rates was filed by the Cazenovia company to become effective a month ago. The proposed tariff change was suspended by the commission, however, in order that it might study the whole matter. A public hearing was held subsequently by Commissioner Spencer B. Eddy.

In his opinion, Commissioner Eddy notes that while customers taking normal exchange service must pay the fixed rates or go without service, those wishing intercompany foreign exchange service need not subscribe to it unless it is desired as a matter of convenience or economy and adds:

"The service from the foreign company is a special service and, like all other special services, should be fully compensatory so that it will not be a burden on the great bulk of customers who neither have nor desire such service."

He comments also that the revenues received from the service will not be large and that the tariff change now approved will enable the customer subscribing to it to know in advance what his monthly costs will be since they can be predetermined. Under former tariffs, they may vary, for the party-line subscribers, as telephones are added to or disconnected from the line involved.

Commissioner Eddy concludes that "in passing on the question here presented, we do not wish to be understood as being optimistic enough to give the proposed tariff such a wholehearted endorsement as to establish it as an infallible guide to the future. We do say, however, under conditions as they exist in the industry as of today and upon the testimony before us, it appears that the tariff has been justified."

V V

Arizona Independent Receives First Rate Raise Since 1918

The Arizona Corporation Commission approved on Feb. 22 an average increase of 22.75 per cent in rates for the Ray Electric & Telephone Co., Hayden (TELEPHONY, Mar. 5, p. 30).

Under terms of the new schedule, the company's 800 subscribers will pay $3.00 for multiparty telephone service, an increase of 50 cents; $3.75 for a one-party line, a raise of 75 cents; and $6.00 for a business telephone, a $1.00 increase.

Approximately $5,852 more revenue per year is expected from the increase. The raise was recommended by the commission's utility staff at a public hearing. No protests were entered, nor were any appearances made by the company's customers.

This is the company's first rate increase since 1918.

V V

Bill to Change Name of Tenn. Commission Sent to Governor

A bill changing the name of the Tennessee State Railroad & Public Utilities Commission to the Tennessee Public Service Commission was given final passage by the state legislature on Feb. 22 and sent to the governor for signature.

The measure also permits the commission to fix the salary of its secretary and extends its power in the discontinuance of service in emergencies.

V V

Georgia Independent Seeks OK To Buy Three Exchanges

W. E. Quattlebaum, owner of the Seminole Telephone Co., Donalsonville, has applied to the Georgia Public Service Commission for a permit to purchase the Cherokee Telephone Co., Rochelle, which owns three middle Georgia exchanges, it was reported on Mar. 20.

Mr. Quattlebaum wants to buy the company from Mrs. Elsie B. Quattlebaum of Rochelle, widow of the former owner. She is a sister-in-law of the prospective buyer.

James Bodeker, field engineer for the Georgia commission, reported said that Mr. Quattlebaum hopes to borrow $497,000 from the Rural Electrification Administration to finance the expansions and improvements.

A hearing before the Georgia commission was to have been held Mar. 9.

Included in the application by Mr. Quattlebaum are these plans:

Pineview—furnish service to 133 subscribers. Spend $59,507 on expansion. Raise rates slightly.

Rochelle—furnish service to 197 subscribers. Spend $128,876 on expansion. Raise rates slightly.

Rebecca—serve 83 subscribers. Spend $43,278 on new services. Increase subscriber costs slightly.

Pitts—establish new exchange. Serve 190 subscribers. Spend $68,423 on the project.

The Pitts project would give toll-free service between Rochelle and Pits, Mr. Quattlebaum said.

V V

SW Bell Tax Suit Hinges On Personal Property Definition

Tax hearings against the Southwestern Bell Telephone Co. reopened on Feb. 25 on the motion of the company, asking District Judge Dan Jackson to dismiss the suit of the city of Houston, Tex., suit seeking $841,764 in disputed 1954 taxes from the company.

Judge Jackson adjourned the hearing until Feb. 28, after listening to a day of testimony given by a Southwestern Bell witness.

The witness, Ben Blanton, cost engineer for the company, said the city erred by classifying "central office equipment" as personal property. This caused a discrepancy in tax figures, he said.

The equipment listed as personal property weighs 150 pounds to the square inch and is bolted to the floors, walls, and ceilings of the telephone buildings, he said.

Such equipment, argue telephone attorneys, is part of the buildings to which it is attached. As such, the equipment classifies as a real estate improvement under Texas law, the argument runs.

Assistant City Attorney Robert Burns said central office equipment as defined by Mr. Blanton includes outgoing cables, poles, lines and other materials "as far away from the central office as Bellaire."

"It could even include property in Dallas," he said. "I should have asked him about the trans-atlantic cable."

The company has offered to pay $591,000 to the city and $440,000 to the school district. The city contends that the amount should be $1,071,000 for the city and $798,000 for the school district.

V V

United of New Jersey Requests Approval of Stock Issue

Decision was reserved on Feb. 28 by Examiner Ernest Giovanelle of the New Jersey Department of Public Utilities after hearing testimony on an application of United Telephone Co. of New Jersey, Newton, for permission to issue 43,500 shares of common capital stock having a par value of $10 each to its parent company, United Utilities, Inc.

It was testified the company will use 10,500 shares of the new issue to redeem $105,000 of outstanding advances from the parent company. The other

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FLEXO LINE

P.B.X. KEYSHELF DIRECTORY UNITS

Hardt Richard W LI 4-0002
Harris Maurice R TA 4-4341
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Henderson Matthew JA 5-5353
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Hodgman Stewart LI 7-0618
Hollowell W T O&E Engrg 1763
Holman Howard H MA 7-3692
Hough W G ME 4-2650
Hull James L GR 3-1130
Illad Louis S EX 4-9006
Imel George M Admin 5460
Ingalls Bernard RO 9-5422
Inson Daniel H EX 2-6221
Inscoe W Edward UN 4-1693
Irvin J W TU 6-2351
Ives Thomas K EM 9-2192
Jackson Albert H AD 4-9113
Jackson Paul G WA 3-5056
Jacobs Wiley W LA 2-9809
Jaffe Louis I AM 5-5943
James Ernest L PE 3-6795
James Leroy JE 3-1603
Jenkins Wright Wm CA 6-8150
Jergens Jack R LE 3-0542
Johns Nicholas DI 4-1158
Johnson C Lloyd O&E Plt 8430
Johnson Ralph W EX 7-9973
Johnson Wilson AD 2-5341
Jones Melvin CO 4-8275
Jones Reginald MA 3-3147
Justis Marshall TI 5-1375
Kaplan Milton H EX 5-1726
Kennon B F Pers Pet 3759
King Robert T HO 3-4340
Kissell Vernon C HU 4-1342
Knight L Stanley RA 7-5650
Kyle John H MA 4-5906
Lamb Donald K UN 3-7086
Lansdale Howard HO 2-9152
LaRue Ralph S TU 8-3254
Lawrence R Wesley EX 4-5491
Lester Robert B O&E Traf 7054
Little Clyde M UN 4-1154
Lowe Linwood L JE 5-6178
Luck Paul RA 5-7231
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Pollard Herman NA 8-4366
Richman Paul UN 8-3840
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With the advent of inter-toll dialing, it is essential for users of P.B.X. Boards to have a visible record of all frequently called numbers. Flexoline Keyshelf Directory units are specifically engineered and designed for use on P.B.X. switchboards and furnish the long-wished-for flexibility of individual Flexoline listings on the keyshelf.

A unique and time-saving feature has been developed and incorporated into the units—the frames are self-indexing. The last Flexoline strip on the front of each frame is *visible*. Thus listings may be added or otherwise changed without concern for label changing or other indexing detail. The expansion factor within each side of each frame is filled with blank Flexoline strips until each space (easily adjustable to any location) is wanted for an actual listing.

TWO SIZES

7 frame unit with 390 listings capacity
13 frame unit with 700 listings capacity

Attractively finished in Greytan—frames are aluminum and are removable. Non-skid corrugated rubber strips are mounted on the underside of the base, which is of "bridge" construction for straddling divider strips on switchboards. (When specified, flat base units will be supplied, with overall corrugated rubber attached to bottom.)

The Flexoline strips are furnished in sheets of 42 strips per sheet, pre-scored horizontally to the 1/6" standard typewriter spacing. With each unit, a supply of Flexoline is included which is sufficient to completely establish the reference listings and to accommodate several hundred listing changes.

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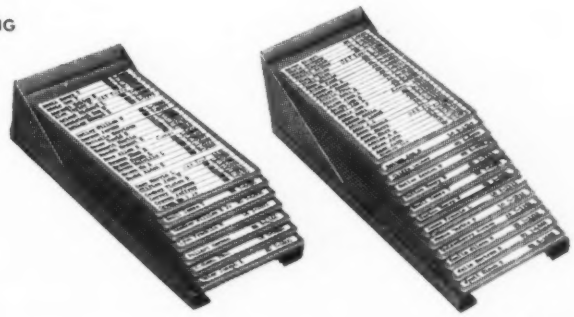

Here are two informative booklets illustrating and describing various units which have been designed for, and use-tested by, telephone companies throughout the country.
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Acme representatives will gladly cooperate with you in promoting "Make Long Distance Calls by Number"

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33,000 shares, it was stated by Henry W. Rasher, company treasurer, will be issued as a stock dividend in order to capitalize a portion of the company's earnings which had been used for additions to its telephone plant since 1951.

V V

General of the SW Granted Three Rate Raises in February

General Telephone Co. of the Southwest, San Angelo, Tex., was granted three rate increases in February. They are as follows:

Exchange	*Old*	*New*
Silverton: dial, 308 stations		
One-party business	$7.75	$9.50
Two-party business	6.00	8.00
One-party residence	4.50	5.00
Two-party residence ...	3.75	4.25
Four-party residence ...	3.25	3.50
Port Lavaca: dial, (conversion-extended area service) 1892 stations		
One-party business	7.75	10.00
Two-party business	6.00	7.50
One-party residence	3.75	4.75
Two-party residence ...	3.25	4.00
Four-party residence ...	2.75	3.50
Point Comfort: Dial (new exchange-extended area service) 262 stations		
One-party business		10.00
Two-party business		7.50
One-party residence		4.75
Two-party residence ...		4.00
Four-party residence ...		3.50

V V

California Commission Refuses Pacific T&T Rate Request

The California Public Utilities Commission on Mar. 1 turned down the Pacific Telephone & Telegraph Co.'s petition for a $4,980,000 annual increase in rates for California telephone users. (TELEPHONY, Feb. 12, p. 36).

The commission commented that the company's application for additional revenue was filed less than three months after new and higher rates had gone into effect.

The commission said the earlier new rates "had not been subjected to a reasonable period of experience . . . and had not had a fair trial."

V V

Montana Legislature OK's Bill

A bill requiring the Montana Railroad Commission to state reasons for findings in its public utility regulatory orders was given final passage by the state legislature on Feb. 25 and sent to the governor for signature.

V V

Buys Missouri Independent

The Missouri Public Service Commission has approved the sale of the Bloomsdale Local Telephone Co. to the Southwestern Bell Telephone Co. (TELEPHONY, Nov. 27, 1954, p. 38).

Florida's Peninsular Company Telephones Up 300% Since 1940

Rapid growth over the past 10 years by the Peninsular Telephone Co., Tampa, Fla., to become the second largest of 5,000 Independent telephone company operating units in the nation was revealed recently by the company's annual report.

The number of telephones served at the close of 1954 was 232,000, a 300 per cent increase over the 1940 year-end figure.

An all-time high of $12,615,000 in new construction was completed and placed in service during 1954. Gross construction in the postwar years alone amounted to over 63 million dollars.

In referring to the prospects of an even larger budget for 1955, Mr. Brorein, company president, said: "Continued construction is required to keep abreast of increasing service demands and to provide needed plant margins for the future."

The average investment per telephone at the end of 1954 was $255, making a total plant value of almost 60 million dollars. This is practically five times the value of the plant in 1940.

Employes reached a new high of 2,121 on Dec. 31, and payroll for the year amounted to $7,698,000. Mr. Brorein said most of this is spent locally and means "a sizable contribution to the economy of the communities we serve."

Both the company's revenues and expenses were reported as all-time highs. Operating taxes for 1954 were over 3 million dollars or a 100 per cent increase since 1950.

The earnings per share of common stock were up 10 cents, and a dividend of $1.75 was paid during the year. More than 4 million dollars in additional common stock as well as 5 million dollars in bonds were sold by Peninsular in 1954.

Despite its very substantial expansion, the company reports that on Jan. 1 there were 9,500 unworked installation orders, and over 4,000 more awaiting regrades to a higher service classification.

V V

Mexican Company Lays Plans For Expansion Through 1959

A second five-year plan that is counted upon to normalize its services throughout Mexico by the end of 1959, has been announced by Telefonos de Mexico, the Mexican republic's major private telephone company. The plan demands a 600-million-peso (48-million-dollar) investment which Telefonos expects to cover by a 150-million-peso (12-million-dollar) bond issue, plus proceeds from the 15 per cent tax on telephone service, and a possible loan from the World Bank.

First attention will be given the Federal District (Mexico City) where it has not yet been possible to fill more than 75,000 applications for service. That attention will take the first three years of the plan. The other two years will be devoted to extending service in the provinces.

There are at present 345,000 telephones in service throughout Mexico (population in excess of 26 million), of which 85,000 are in use in the Federal District, which has nearly 4 million residents, Telefonos announced.

With authorization of the Ministry of Communications and Public Works, Telefonos has raised its subscriber rates in the Federal District and in Monterrey, Mexico's third largest city.

The boost is 25 pesos ($2.00) a month from 15 pesos for residence service, which is limited to 150 outgoing calls per month, with a charge for extra calls; and 45 pesos ($3.60) per month, with 300 outgoing calls allowed, for business service. Both rates have the 15 per cent federal tax. The rates are retroactive to Jan. 1. Physicians, surgeons, registered nurses, midwives and also small factories—those run by the owner and his family—are charged only the residence rate.

The ministry clamped down, with stiff fines, upon subscribers who let the public use their telephones, for charging the exhorbitant rate of half a peso (four cents) per call. The ministry insists that public telephones must be had at not more than 10 centavos (about ¾ cent) for a call. Half a peso is much money for most people in Mexico. In the Federal District, the minimum daily wage is 9.50 pesos (76 cents).

V V

AT&T To Use Off-the-Air Pickup For Extending TV Network

The Long Lines Department of American Telephone & Telegraph Co. announced on Feb. 25 an off-the-air pickup arrangement as a major step toward the solution of the problem of extending network programs to television stations in the more remote areas of the nation.

The proposal was made in a letter to the Federal Communications Commission (FCC) outlining the result of a detailed study of practical procedures for making network programs available to smaller communities off the main television arteries.

Ralph L. Helmreich, director of

operations for Long Lines, said "We believe the off-the-air arrangement is the most practical means of extending network programs to these areas at the lowest possible cost to the stations."

When a request for the off-the-air arrangement is made by a customer, a specific charge for each channel will be developed which will reflect the particular conditions involved.

In its letter to the FCC, Long Lines said that preliminary estimates indicate that "the charges in cases involving distances of 100 to 125 miles . . . probably will average about half of those which would apply for direct connections to the network. In individual cases, the differences may vary substantially from this average—tending to be larger for shorter distances."

Economies would be realized by eliminating the monitoring, supervision and some equipment features now used to protect the quality and continuity of service on the regular network facilities on which the programs of many TV stations depend.

The off-the-air arrangement involves the pickup of audio and video signals broadcast by a station on the regular network facilities and the transmission of these signals to the remote station by channels furnished by the telephone company under contracts covering a minimum period of three years.

V V

"The Tax Foundation . . . reveals the fact that a $4,500-a-year man works two hours and 23 minutes of his eight-hour day to earn enough to pay his taxes. . . . It seems to us that facts presented in this understandable way will do more to alert the people to the evils of big government and all it represents. Furthermore, we must never forget that we never get anything for nothing." Lambertville (N. J.) BEACON.

"MADAM, YOUR TELEPHONE WILL WORK, IF YOUR CHIEF REPAIRER DOESN'T GET HIS HANDS ON IT AGAIN."

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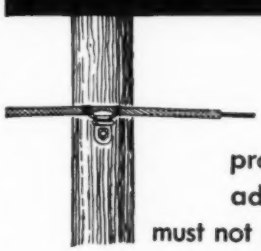

PLASTIC insulated wires within a jacket are proving to have definite electrical and economical advantages. However, this thermoplastic insulation must not be subjected to concentrated stresses. Ordinary support fittings are not suitable for this type of cable. THE ANSWER: PLP Dead-Ends and Tangent Support Line Guards used as shown above protect while firmly holding cable in an elongated grip, in which the unit pressure is small because of the large area of the gripping surface. For details of their exclusive advantages, ask your Distributor or write us for Descriptive and Technical Data.

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RESIN-SEALED APPROACH TO SPLICING

Continued from page 19

where true sealing is required. But as with most engineering problems, a sound engineering approach can eliminate most objections.

Referring to *Fig. 5*, a sectioned illustration of this splice may be seen. This splice uses epoxy resin for blocking, sealing and dead-ending the cable and employs a gasketed cover over the splice area. Design of this splice is such that the optimum conditions are

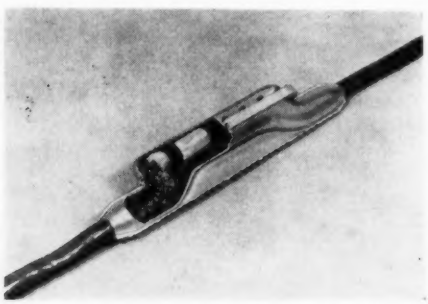

Fig. 5. Reopenable straight splice in section.

established for a gasketed mechanical closure. The splice cover and its seating ring are of one piece drawn aluminum sheet construction. Gasketing takes place in only one rigid plane between seamless parts. The complications of gasketing intersecting planes or warped surfaces are avoided. Light weight and non-porous construction are guaranteed by avoiding metal castings.

The most simple condition for use of the resin is also established in this splice. The rubber putty inner chamber seal used in the openable splice is not required in this splice to keep resin out of the splice area. This is accomplished by vertical offset of the cable. *Figs. 5* and *6* illustrate how this offset brings the conductor bundle through the resin block and raises it above the liquid level in the splice area. Thus, gravity is used to keep the splice area clear of resin.

Installation of the Reopenable Splice

Installation of this splice involves approximately the same time as the openable splice. However, the installation is made preferably before the cable conductors have been spliced. By installing it before conductor splicing, the cables are secured for splicing and errors in sheath opening dimension, etc., are avoided. Since the splice body is formed in two longitudinal halves, it can be applied to a cable which cannot be cut. In this case, a small amount of cable slack must be pulled to permit the slight off-set required. This feature is most often required in the wye or bridge splice version. Where the tension of an existing cable does not permit the small slack required for offset, piecing of the entire cable may be required.

After trimming sheath to proper length, the splice body is installed and the seating ring is dropped over the cable and inserted into the splice body opening *(See Fig. 6)*. The seating ring is secured in the body by means of four screws. These screws provide also a means of mechanically connecting the cable shields together through the splice body, ring and cover. The splice is then secured in a level position, the "Scotchcast" "Unipak" mixed and poured into the seating ring opening. The splice is then left undisturbed for 10-20 minutes while the resin cures to the solid state.

The resin, in this single pouring, performs several functions. First, it anchors the cable sheath and blocks the cable. If a block is not desired, the sheath may be cut so as to extend above the liquid level, thus excluding the resin from the conductor bundle. Secondly, the resin bonds the splice body together. Thirdly, the resin bonds to the sealing ring skirt, thus isolating the area inside the ring opening from all other areas or seams in the splice body.

After curing of the resin, the conductor splicing may be done and final closure made. The one piece drawn aluminum cover carries an "O" ring section gasket which seals against the sealing ring *(See Fig. 6)*. After the

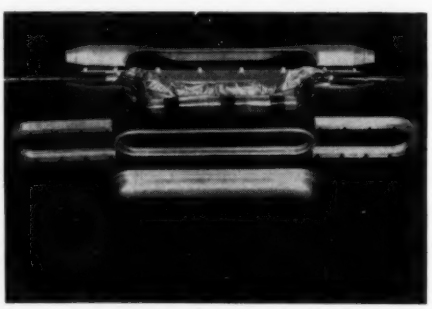

Fig. 6. Reopenable straight splice—exploded view.

splice bundle is wrapped with an insulating polyethylene film, the cover is placed into position and secured with the clamping ring.

The clamping ring consists of two "U" shaped channel members which slide onto the cover flange. These members are provided with a series of setscrews which are tightened down with a screwdriver to compress the "O" ring gasket. This clamping ring is not mechanically connected to the splice body, but clamps only the cover and sealing ring, thus avoiding any possible loosening due to expansion and contraction of the splice body. It is proposed to further simplify this clamping means in a future version of this splice by eliminating screw thread fasteners. Unless sequenced and torqued, screw fasteners may reduce the effectiveness of any clamping system.

Again reviewing the splice development specifications originally stated, the reopenable splice compares as follows:

(1) CABLE MOISTURE BLOCKS. Available, but may be omitted per user's option.

(2) CABLE MATERIAL AND SIZE RANGE. The reopenable splice will accommodate a cable size or material range equivalent to the openable splice.

(3) ECONOMY IN TIME AND COST. Time for installation of this splice, excluding conductor splicing, is slightly less than the openable splice and should not exceed 20 minutes. As in the openable splice the basically simple parts and resin requirements indicate a potentially low material cost. The initial investment of material and labor is not lost in the event of future re-entry. A further advantage of this splice on new installations is that the splice body may be installed when the cable is erected, thus blocking the cable against moisture entry until such time as the conductors are spliced and final closure made.

(4) PERMANENT, BUT REOPENABLE. The reopenable splice meets the requirements for easy access and indicates satisfactory gas tightness under 30 p.s.i. cycling. Permanency is equal to cable life.

(5) TENSILE STRENGTH. The reopenable splice also exhibits tensile strengths in excess of all copper conductor telephone cables tested. The conductor bundle offset provides additional dead-ending not available in the openable splice.

(6) APPEARANCE. Somewhat unconventional by present standards, but nevertheless pleasing in appearance. Equal in weathering ability to openable splice, but not as well suited to direct burial without corrosion protection for cover.

(7) ADAPTABILITY. The construction of the splice body readily allows manufacture with dual cable entry holes. The conical ends permit trimming to proper cable diameter, as with the openable splice.

The Solid Splice. Some application of the solid cast epoxy splice may be made to the communications splicing field. In general, the solid splice finds its greatest application in splicing power carrying cables where splicing problems are due largely to moisture or corona. The primary usefulness of the solid splice is in the splicing of small cable where accessibility is of negligible importance. In 1954, some field use has been made of the solid splice in buried coaxial cable splicing and 6-16 pair telephone cable splicing.

The standard 82A "Scotchcast" splicing kit produced by Minnesota

(Please turn to page 47)

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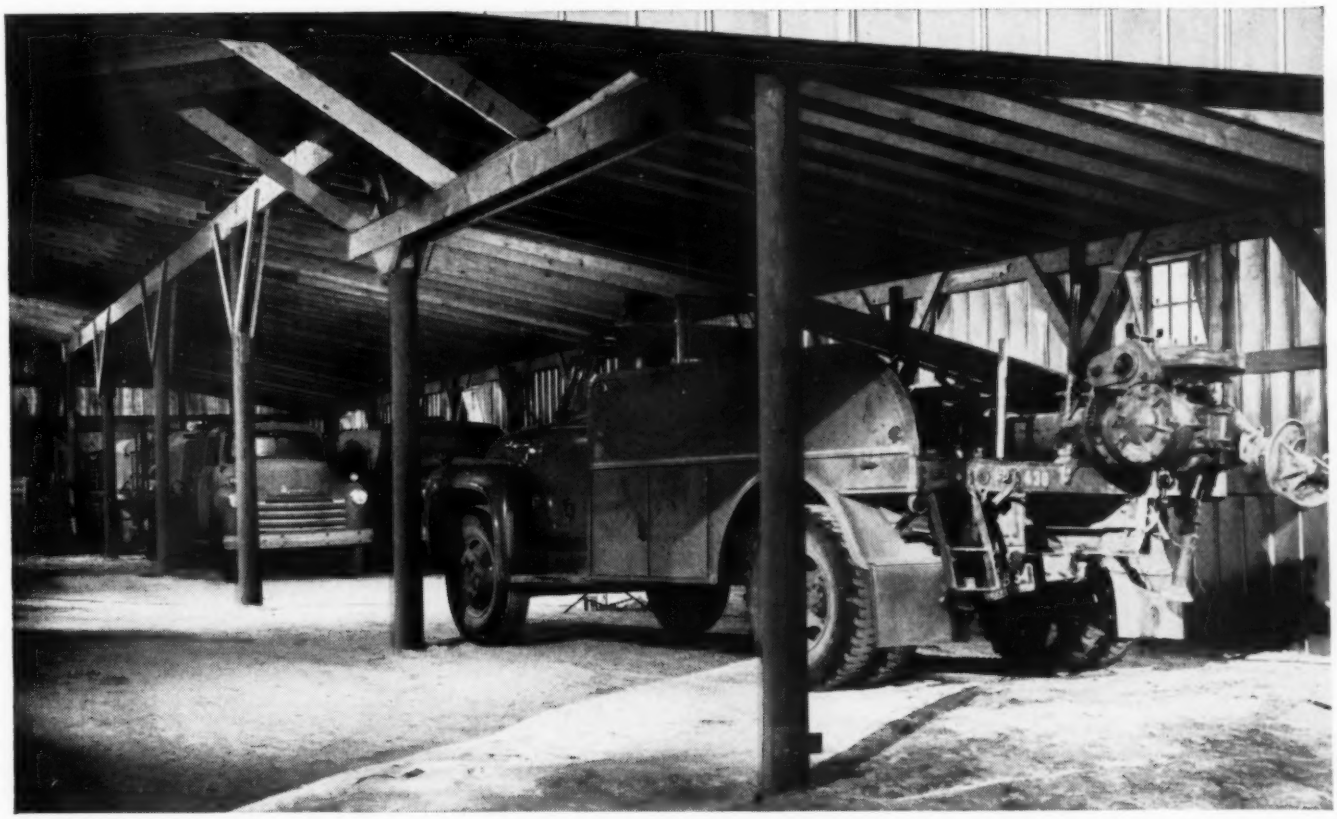

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- Terminal saves money
- Die-hard battery
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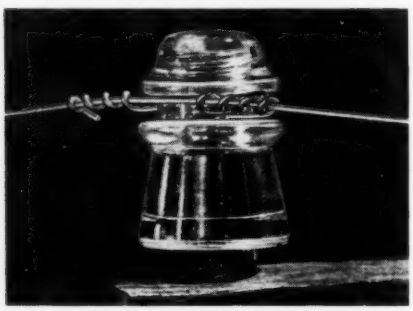
- Tops for spinning

Published every week to help you get the most out of your materials and supplies dollar

Single-petticoat insulator has *long* leakage path

You get just about the longest leakage path possible with a single petticoat, on this Hemingray Number 17 insulator for medium length lines. It gives you excellent service through all sorts of weather, protects the pin from moisture, and isn't disturbed by sudden or seasonal changes in temperature.



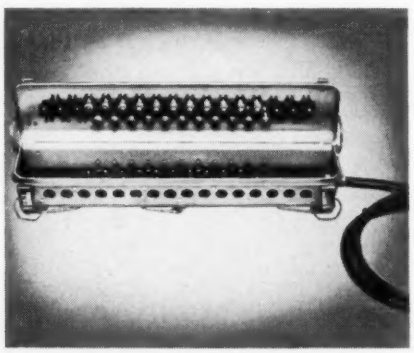
Long petticoat, small size make the Number 17 insulator highly useful.

It's easy to put up, too, because it has a full 7/16" square groove, over ⅜" deep, which provides better support. This means you can work faster, and be sure you are putting your lines up to **stay**.

You save money both ways—on installation time **and** maintenance time. Hemingray insulators are made by Kimble Glass Company, subsidiary of Owens-Illinois, and have been the "World standard since 1870."

Designed for economy

That's the way to describe the New "Stranterm" cable terminal, the most flexible terminal ever developed. The Stranterm is primarily strand-mounted, but may be pole-mounted. The stub may be taken out of either end of the terminal and can be either lead or plastic cable. The core section is gas-tight and moistureproof; the terminal may be protected, **even after installation,**



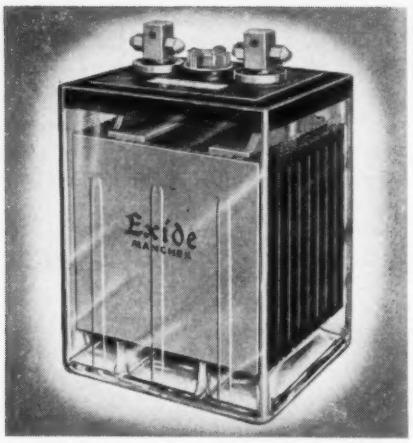
Strand-mounted cable terminal.

either fully or on a pair-by-pair basis by the addition of Cook's "snap-in" Mini-Gap arresters. The 11 and 16 pair core assemblies are interchangeable and replaceable; and drop wire openings are completely sealed by an exclusive grommeting arrangement. Manufactured by Cook Electric Company in 11, 16 and 26 pair sizes, with 3½ foot cable stubs.

Protect yourself from battery failures

You can use Exide Manchex Batteries for central office and private branch exchange equipment, and be sure you'll get a supply of power when you need it. These batteries have been proven daily in exchanges of every size, and for 67 years Exide Batteries have been serving the telephone industry.

The manchester positive plate with its exclusive button-type construction provides exceptionally



Old age, even high discharge rates, have little effect on this battery.

long life. Latest developments on molded glass jars permit compact space-saving installation.

Heavy terminal posts with copper inserts provide extra conductivity for sustained voltage at high discharge rates. Microporous rubber along with slotted plastic separators, are impervious to chemical and electrical reactions. Plastic spacers assure plate alignment.

Noise can be money!

Take a business subscriber who has a telephone in some extremely noisy location—and who has finally decided to do something about it. Would you rather have him spend money in building a soundproofed booth—or give **you** the money as monthly income on a telephone which completely licks the noise problem?

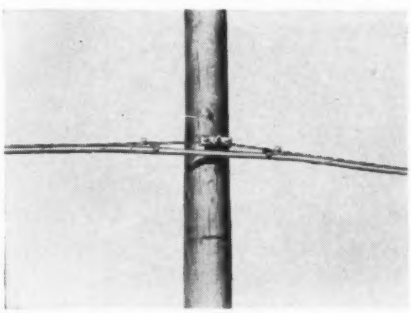
The GAI-PHONE is such an instrument. It has a special transmitter that actually creates a "Zone of Quiet" around the handset—even in a spot as noisy as a boiler factory!

It costs the subscriber **less** than a booth—and you get the revenue!

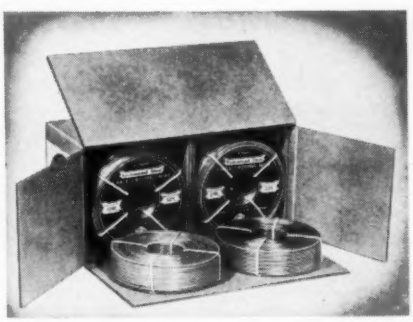
Ask us for complete details.

Lashing Wire for economical cable spinning

When you spin cable for suspension, the lashing wire is a key factor. That is why major telephone companies have gone to **Crapo** Corrosion-resistant Stainless Steel Lashing Wire for cable spinning. The 1200-foot coils of .045-inch diameter wire specially designed for use with modern cable lashers, make for over-all economy. Available also, in .065-inch diameter, 450- and 650-foot coil lengths.



Lashing wire for use with lead or plastic sheath cable and steel strand.



Crapo Lashing Wire comes in compact, easy-to-use thread-lay coils.

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Mining & Manufacturing Co. has been used for the encapsulation of mechanical coaxial connections, thereby waterproofing for direct burial. It has been likewise used in splicing 6 to 16-pair plastic telephone cable in new installations when low cost and permanence are desired and accessibility deemed unnecessary *(See Fig. 7)*. Other miscellaneous communications applications of the resin alone have included connector potting, end sealing of reeled cable, sheath puncture repair and cable sealing at termination points.

Some speculative investigation has been made into a splice possibly suited

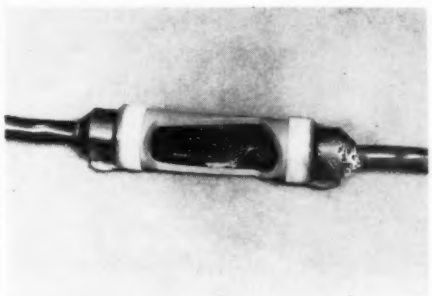

Fig. 7. Solid splice, 11-pair plastic cable.

to splicing of Spiral-4 field communication cable. The general requirements of this splice are met by the splice illustrated in *Fig. 8*, with the exception of splice flexibility. This splice is composed essentially of a small, thin aluminum housing which surrounds the individually insulated conductor splices and the fuzzed out steel braid ends, all of which are imbedded in epoxy resin.

After the conductors have been spliced with insulated connectors, the steel braid ends are stripped of their jackets and fuzzed out. Electrical continuity of the steel braid is insured by means of metal tabs which are crimped with pliers to several braid strands at each end of the splice. The aluminum shell is then snapped together around the splice and the "Scotchcast" "Unipak" poured through a spout formed into the shell.

Due to embedment of the steel braid in the solid casting, the tensile strength of this splice exceeds that of the cable. The electrical performance of this splice shows no impairment due to water immersion, humidity, cold stressing or cable flexing. Installation requires no special tools and can be made over a wide range of temperature.

A greater amount of physical abuse can be absorbed by the solid cast splice, being tough as well as rigid. Eventually, fast-curing flexible self-hardening resins may permit the making of rubber-like splices in a similar manner.

Summary

In the author's opinion, the splices discussed in this paper offer sufficient advantages for serious consideration. In effect, they combine the better properties of mechanical closures and liquid epoxy resin into an approach impossible with either alone. In the case of the openable, reopenable and solid splices, the advantages of convenience, uniformity, appearance and abuse resistance are obtained through use of a mechanical housing. Beyond these advantages are those of the epoxy self-hardening resin which saturate, seal and unite cable to housing in a way impossible to accomplish mechanically.

It is difficult to assess the relative merits of the openable and reopenable splices. Each has sufficient advantage to warrant application to existing problems. Some cable installations need rarely be disturbed, thus recommending use of the openable splice. Others may require frequent access if only for testing, thereby making the reopenable splice most economical. The reopenable splice offers the greater future adaptation to problems of improved, yet lower cost cable installations, in the author's opinion. What is now the cover on the reopenable splice may become a terminal box, a loading coil or possibly a chamber to house a miniature repeater. The reopenable splice may be regarded

Fig. 8. Solid splice, spiral-4 field communication cable.

as a base upon which a variety of miniature equipment may be built into the cable.

As in all new approaches that depart from convention, field proving of this approach to communication splicing is vital before strong positive statements can be made. All testing performed to date warrants an optimistic outlook toward the installations being made on operating systems. In the final analysis, this approach to splicing can be best judged by its ability to perform without concern as a means to an end, not as an end in itself.

V V

Telephone Links China, India

On Mar. 2, the Peiping radio said a direct radio-telephone service between Communist China and India was opened. It links Peiping and Shanghai with New Delhi and Bombay.

XUM

REGINA

Canada's New Communication Center

Saskatchewan Government Telephones' new Regina main exchange building in Regina.

By J. L. PULFORD and D. M. BROWN

Northern Electric Co., Ltd., Montreal Canada

GEOGRAPHICALLY located approximately half way between the Pacific Ocean and the Great Lakes in that vast land north of the 49th parallel in Canada, lies Regina, largest city in the province of Saskatchewan, affectionately called the Wheat Province.

Western Canada's rapid economic growth closely coupled to British Columbia's aluminum and power developments, Alberta's oil and gas exploration, Saskatchewan's already tremendous grain potential and new found oil reserves, as well as Manitoba's rising industrial, mining and agricultural wealth, has increased the demand for telephone service both local and long distance at a fantastic rate.

With the decision of the Trans-Canada Telephone System to use an all Canadian route as the backbone of Canada's contribution to the nation-wide plan, Regina is projected into the forecasted ultimate arrangement as a western Canadian focal point, through which toll traffic, north, south, east and west will be ultimately switched.

In preparation for this important function in so great a system, the Saskatchewan Government Telephones entrusted in one Canadian company, the Northern Electric Co. of Montreal, the responsibility of engineering, manufacturing and installing a complicated maze of automatic, power, toll switchboard and carrier equipment, as well as the transfer of all existing reusable equipment from the old Regina main exchange to a newly constructed well planned edifice to be known as the New Main Office.

To provide an adequate source of 24, 48, and 130-volt supply an extensive power plant arrangement has been laid out to serve not only automatic facilities but also toll, carrier, and voice frequency carrier telegraph equipment (VFCT).

Regina's new 60-position 3CL toll switchboard initially operating on a ringdown basis will in the future become the nerve center of a rapidly expanding Western Canada and toll dialing system.

Designed for integration into the modern concept of crossbar toll switching, this board has been engineered for future utilization with either the 4A or cross-bar tandem type of office.

To provide new facilities linking Regina with both eastern and western Canada on a long haul basis, two new "J" carrier terminals will be added to the Trans-Canada network working on a back to back basis, thus providing terminating and originating facilities to supplement existing main repeater equipment.

In order to insure that subscribers are subjected to a minimum of disruption, toll terminal equipment associated with the existing board in the old exchange must be transferred to the new building. In some instances this equipment to be transferred will be working simultaneously with both the old and new switchboards.

Since existing test facilities are obsolescent and taxed to capacity, a complete range of new equipment incorporating more extensive and recently developed features has been included.

Not actually included, but closely allied to this project is a 2,000-line extension to the Regina North Office. Extensive engineering and installation will be required to link together this office and the New Main Exchange. As well as the inclusion of a new toll train tying in the Regina North Office with the new main exchange, extensive rearrangements will have to be carried out at Regina North for future coordination of this exchange into the nation-wide 2L5N dialing plan.

Throughout the complete negotiations of this project, a high degree of cooperation at all levels between operating company and manufacturing company personnel has played a large part in the maintenance of promised cut-over schedules. Indication of this cooperation and stemming out of two important meetings involving all departments concerned was the advance ordering of main items of equipment without benefit of detailed specifications.

To keep pace with a closely scheduled program, it was absolutely essential that such things as pneumatic tubing, main power plant components, auxiliary framing and miscellaneous ironwork be made available well in advance of normal delivery intervals.

On a project involving the use of new automatic equipment and the transfer of existing apparatus from one building to another complexities must of necessity arise. A rather interesting aspect of this phase is the manner in which the 21,000 terminals representing the initial installation will be readied for service. Basically speaking, the method followed will be to provide an initial 8,000 terminal office which will be installed, tested and prepared for operation.

Using this nucleus of new equip-

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MAXIMUM EFFICIENCY AT MINIMUM INITIAL COST.

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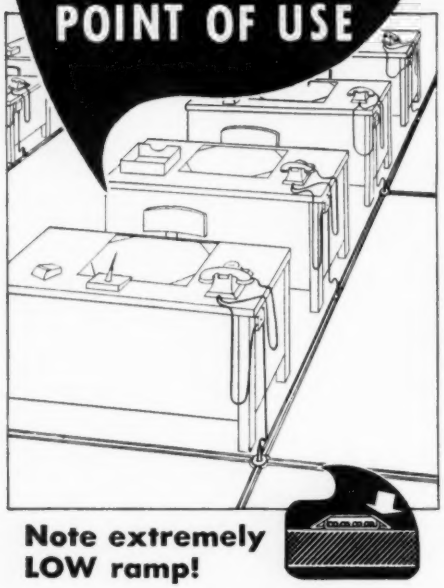
OVERFLOOR RACEWAYS

Here's
the *easiest* way
to get
TELEPHONE OUTLETS
right to the
POINT OF USE



Note extremely
LOW ramp!

There's no question about it . . . PANCAKE is the simplest, safest way to get telephone outlets right to the point of use!

PANCAKE carries telephone wiring overfloor to ANY point where telephones are needed. It is easily installed without channeling into walls or floors — just as easy to move and extend. PANCAKE is extra sturdy, too — BOTH base and cover are heavy gauge galvanized steel. Two interconnecting sizes answer every requirement.

Write today for the PANCAKE booklet giving specifications and full information!

WIREMOLD
Makers of
PLUGMOLD—multi-outlet systems
WIREMOLD—electrical raceways
PANCAKE—overfloor raceways
THE WIREMOLD CO.
Hartford 10, Connecticut

ment, tie cable arrangements will be set up to transfer two existing five-digit and four four-digit offices from the present main exchange to the new building.

Concurrent with this transfer the four-digit offices will be arranged for five-digit operation and to all transferred offices, digit absorbing selectors will be added looking ahead to incorporation in the nation-wide 2L5N numbering plan.

IN THE NATION'S CAPITAL

Concluded from page 21

espionage, kidnapping, sabotage, treason, sedition, and violation of the Atomic Energy Act, or, if necessary, to prevent these acts. The resulting evidence could be used in federal courts only in prosecutions for these crimes.

The attorney general, on application by any federal agency, would certify that the interception might result in obtaining of evidence or in the prevention of the listed crime and would designate a representative of the Department of Justice to apply for an *ex parte* court order. The application would be made to a district court judge in the district where the interception is to occur, or a neighboring district, or to a judge of the District of Columbia court of appeals. The need for, and the nature of the interception must be stated with particularity. The order would be valid for not more than 90 days, renewable upon a similar application. The court could grant the order if satisfied that the evidence is not otherwise obtainable and that the application is in all other respects proper.

There are provisions guarding against "shopping around" for a "favorable" judge. The confidential nature of the application and order would be protected. The attorney general would be required to make detailed reports annually on the extent and results of the wire-tapping program, including information on each application and interception. He would be authorized to issue rules and regulations. He could delegate authority only to the attorney general or an assistant attorney general.

The possession of wire-tapping equipment could be made presumptive evidence of an attempt to violate the law, punishable up to $5,000 and five years' imprisonment. Illegal wire-tapping or unauthorized divulgence of legally obtained information is made a crime punishable by up to $5,000 and 10 years' imprisonment.

Explaining his bill Representative Celler said:

"It is time we had a straightforward federal law on the subject of wire-tapping. Nobody knows the extent to which wire-tapping has become commonplace practice within federal or state jurisdictions. The law-abiding citizen's right to the use of his telephone must be protected. The scandalous disclosures of illegal eavesdropping brought to light in New York dramatizes the need, not only in that state, but within the area of federal jurisdiction, for a law that protects both country and the citizen."

New York State may be in for a review of all wire-tapping. The problem here is to develop scientific detection to the point where the telephone company is aware of illegal tapping and can cooperate in enforcement of prohibitions. Apparently there is a vast area for study. The law has not kept up with electronic discovery and needs to be tightened up.

It might prove useful if the New York legislature takes stock of the legal variety, which has operated more than 15 years under judicial safeguards as a valuable instrument of crime detection. There are those who oppose eavesdropping for any purpose on the theory that good ends ought not be attained at the risk of something worse. Yet it is hard to point to any conclusive evidence of widespread abuses; the police and the district attorneys can doubtless make out an excellent case to the contrary.

Expand Specialized Training

In the current issue of *Harper's Magazine*, there is an interesting article on how the Bell Telephone Co. of Pennsylvania is exposing its promising young executives to the humanities. Pennsylvania Bell's president, W. D. Gillen, decided several years ago that his company could use more men with a broader educational background than is usually found in men with narrow and specialized training. Accordingly, Gillen worked out a plan with the University of Pennsylvania to give those young executives in his company who aspire to top management posts a firm grounding in the humanities and the liberal arts.

In the spring of 1953, as a consequence, the Institute of Humanistic Studies for Executives came into existence on the campus of the University of Pennsylvania. The first group of Bell executives spent nine months and 550 hours of lectures, discussion, and seminars on subjects ranging all the way from Oriental history and art to the intricacies of James Joyce's Ulysses. It is, of course, too early to pronounce judgment on the experiment. But Gillen and university officials in charge of the program have high hopes and firm convictions that what top management needs today are men who know not only how to answer questions, but what questions are worth asking.

PENINSULAR'S MICROWAVE

Concluded from page 24

multiplex equipment at each terminal, and a single antenna at each end of the system.

The transmitting and receiving microwave equipment is a wide-band FM radio system designed especially for telephone use. Since the system operates in the 900-megacycle band, only conventional radio techniques are involved. At Tampa, the transmitter and receiver are mounted on separate 7-foot self-supporting racks. At Clearwater both transmitter and receiver are mounted on the same 11½-foot rack.

The 48-channel multiplexing equipment uses standard frequency division methods and operates between 40 and 264 kilocycles. Each channel has its own signaling facilities arranged for dial signaling. In spite of the large number of channels, the complete multiplexing terminal at Tampa is mounted on two 9-foot open-frame racks. At Clearwater two 11½-foot racks are used. Not all of the available rack space at either terminal is occupied.

The multiplexing equipment is of the latest unit type construction. It consists of 48 channel units and several group units (units that affect more than one channel). Each channel unit contains a modulator, demodulator, amplifiers, signaling circuits, and channel regulating equipment. Other units contain group modulation equipment, carrier supplies, and other group equipment. Any of these units can be unplugged from the assembly for maintenance, trouble shooting, or replacement. Trouble shooting is especially simplified by the isolation techniques possible with plug-in assemblies. *Fig. 2* shows the multiplexing equipment installed in Peninsular's central office building at Tampa.

Installation

Installation of the new microwave system went very smoothly. A total of seven bays of radio and carrier equipment at both Tampa and Clearwater were installed and cabled by three installers in four days. The antenna mountings were fabricated and the antennas installed (including running of transmission lines) by two Peninsular employes in 11 days.

Total line-up of the complete 48-channel system from testboard to testboard was completed in one week. This included testing the radio equipment, line-up of each individual carrier channel and orientation of the microwave antennas.

The new system was placed in regular service on Aug. 1, 1954.

It's the "Cat's Meow"

For ELIMINATING Service Calls!

Lorain HOWLER

You wouldn't think a cat's "meow" could decrease your service calls, but the Lorain Howler, which produces a signal tone very similar to a cat's "meow", does just that! Should your subscriber leave his receiver off the hook, the Lorain Howler will start its "meow" and will continue until the subscriber locates the source of the noise and replaces the receiver, restoring the line to service.

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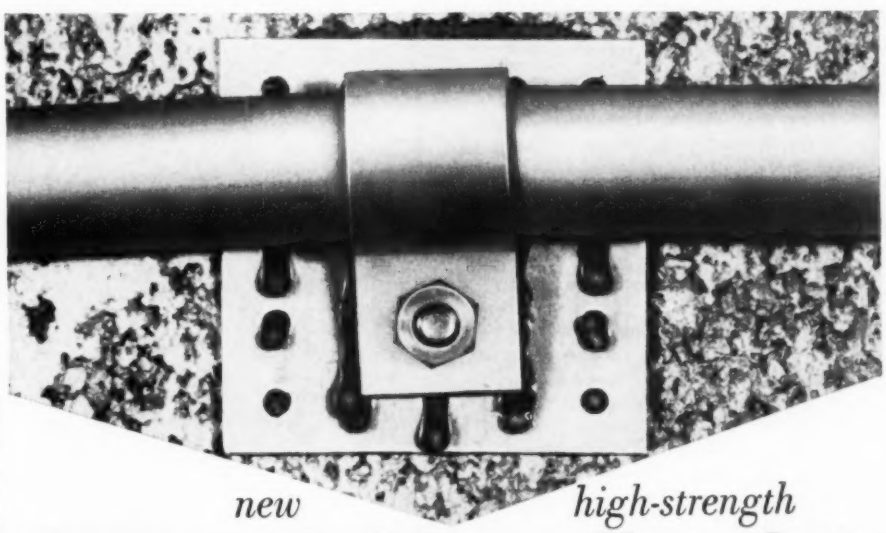

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dependable adhesive

Service-proved PLACCO 1000

Ask us for references on the long-life holding power of Placco 1000. Other advantages are elimination of drilling; ease of installation in congested areas; low cost; quick setting; adhesion to porous and non-porous surfaces; installation indoors or out.

A complete line of wire and cable hangers is available in either stainless or galvanized steel. Send for bulletins on both adhesive and hangers.

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LINCOLN BOULEVARD LATEX & CHEMICAL CO. MIDDLESEX, NEW JERSEY

Pat. Pend.

*KLEIN KUT PLIERS

for both regular and heavy-duty cutting

It was Klein that produced the first and still the finest regular side-cutting plier. Klein also gave the industry the modern, streamlined version so much in demand.

And it's Klein again with a new, high leverage cutting plier for light- or heavy-gauge wire, including No. 2 weatherproof hard drawn solid copper wire, and A.C.S.R.

There's no extra hinging of any kind—no uncomfortable wide-spread handles—with this new Klein-Kut Plier. The offset hinge permits the extra-high leverage and operation is as smooth and easy as with any other Klein Plier. Forged from high-grade tool steel, individually fitted, tempered, adjusted and tested. Ask for No. 213-9 N.E. for streamlined pattern.

Regular pattern available

Same high-leverage design, but in the original Klein side-cutting pattern. Ask for No. 213-9.

Write for free Copy of Bulletin 1054

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THE PLANT MAN'S NOTEBOOK

Concluded from page 26

We stopped on the way at an Indian village where a ceremonial dance and a feast were in progress. This was a most colorful affair and several hundred braves, bedecked in lurid colors, participated. It would have made a wonderful color shot, and we were armed with our faithful Leica, loaded to the hilt.

Unfortunately, however, we were not permitted to take pictures. The Indians in charge would not listen to our pleas even though we offered to pay liberally for the privilege. They merely stated that pictures were forbidden by the governor and it was not for them to question why. We finally left with our cameras still in their cases and the many dogs loudly barking at our heels.

On the flight back to Washington, we left Albuquerque on a TWA "Constellation," changed planes at Kansas City and stopped briefly in St. Louis. The many flights made on this trip were practically all on time and not once was one more than 15 minutes off schedule. We believe that this speaks well for modern air travel, made possible by good and reliable electronic equipment and communications.

V V

Western Electric to Construct Arctic Radar Warning Net

The quarter billion dollar automatic radar warning net along 3,000 miles of the Arctic circle will be constructed by the Western Electric Co., the Air Force announced on Feb. 21.

It will give American cities two to six hours' warning against a Russian A-bomb attack.

Construction of the so-called "Dew" (distant early warning) line will be started this summer on an urgent priority rating to be ready by 1957 when Russia is expected to be capable for the first time of sustained bombing raids with jet bombers.

Western Electric won the big contract as the result of its pioneering development of an automatic system of radar warning that sounds an alert signal whenever a plane enters the North American continent from across the north polar area.

The "Dew" line radar net was developed by the Bell Telephone Laboratories and the Air Force's top secret Lincoln Laboratory at Massachusetts Institute of Technology.

Canadian ideas in radar warning developed by McGill University for the so-called McGill fence across northern Canada also contributed to the design of the Arctic radar net.

The Arctic radar stations, by using automatic signals, will require fewer operators. Pentagon sources said eight men could operate an automatic station compared with more than 100 at a standard radar station.

The far north radar will detect hostile planes and flash a rapid warning to air defense command centers in Canada. From these centers, the alert will be relayed in a few seconds to American air defense centers.

The Air Force disclosed no estimate of what the Arctic circle radar network will cost, but other sources said the construction would involve at least a quarter billion dollars. Other estimates have run as high as 1 billion dollars.

Both American and Canadian subcontractors will share in the Western Electric prime contract. Work will start as soon as the shipping season opens in the Arctic in July.

Answers to Traffic Questions On Page 30

(1) Yes.

(2) Yes.

(3) Yes, if it seems appropriate to do so. One of the following phrases, which ever is suitable, should be used:

a. "That number is (called number)."

b. "They do not answer. Will you place your call again, please? That number is (called number)."

(4) Say "Right" and clear the circuit.

(5) An operator should never comply with such a request.

MINNESOTANS FIGHT

Concluded from page 36

companies to have modern, easily-checked office procedures and systems.

"A good billing system will definitely improve public relations for a company," Mr. Hultkrans said, "while a complete clerical system, adequately checked by proper controls, will free management from tedious checking of trial balances and having to answer complaints of incorrectly-billed subscribers."

He then described the various bookkeeping and accounting record forms which his company produces.

The convention elected a completely new 15-man board of directors, occasioned by the fact that the association was incorporated this year, requiring the election of a new board. The convention approved the incorporation and a change in the association's name to Minnesota Telephone Association, Inc.

The following 11 former directors were re-elected:

H. James Boyd of Alexandria; Eldon Eckles of Blue Earth; Kenneth A. Johnson of Bricelyn; Carl M. Ostby of Erskine; Charles R. Cashel of Worthington; Warren B. Clay of Hutchinson (deceased); Elnathan C. Gates of Minneapolis; C. F. Marvin of Zumbrota; Harold R. Bollinger of Waconia; P. M. Ferguson Jr. of Mankato, and Vies Martinsen of Grand Meadow.

The following four new directors were elected to complete the 15-member board:

Wayne Caldwell of Clarkfield; Ben H. Hohman of Pelican Rapids; Charles H. Joy of Fairmont, and Walden Piehn of Harmony.

The directors then elected the following officers: president, Mr. Eckles; vice president, Mr. Boyd, and secretary-treasurer, Keith W. Vogt of St. Paul.

V V

Honor R. V. Achatz for 25-Year Record as Scoutmaster

R. V. Achatz, general manager of the Southern Indiana Telephone Co., Lawrenceburg, Ind., and widely known in the telephone industry, was honored recently in a surprise celebration which commemorated his service for 25 consecutive years as scoutmaster of Troop 46, Lawrenceburg. Mr. Achatz has been the only scoutmaster for the troop since its founding in 1930.

More than 200 persons were present in the St. Lawrence Church Auditorium to pay tribute to him for the outstanding record he had made, and in addition many telegrams and letters were received from people all over the

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String your drops with Alphaduct. They'll last longer, serve better and lower your costs on maintenance, repair and replacement.
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Step-testing during every phase of manufacture insures uniform high quality, and the handy carton packaging protects the wire until you're ready to use it.
So sure are we . . . that you'll not find a longer lasting drop wire . . . that every coil is dated . . . so you can see for yourself that it lasts like we say it does.
Alphaduct neoprene jacketed drop wire is available in parallel, twisted pair and dumbbell type construction. Try it.
IT'S DATED • FOR YOUR CONVENIENCE AND PROTECTION

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The rugged tensile strength of Crapo HTL-135 and its heavy galvanized coating provide dependable and economical service life on typical rural lines.

Ask your jobber for details or write direct for engineering data!

INDIANA
STEEL & WIRE COMPANY
Muncie, Indiana

nation. In thanking those persons who were present, Mr. Achatz stated: "In honoring me, I think you are honoring the Boy Scouts." He was presented with a universal scout pin set with three diamonds.

Even more impressive is another anniversary which Mr. Achatz celebrated on Mar. 1. He recollects that on Mar. 1, 1900, at Algona, Iowa, he began his career in telephony with The Algona Telephone Exchange Co.

One-half of his job, he recalls, was for free, and consisted of tagging after his uncle, H. J. Achatz, the lineman for whom he changed dry cell batteries and performed other duties. For the other half of his first job he called people without telephones to come to the office to answer long distance calls. For this service he was paid 10 cents per message. He recalls that he sometimes made as much as $2.00 a week.

V V

Bell of Pennsylvania Commended For Executive Development

In editorializing recently on the need for executives to have an interest in the liberal arts, the Chicago *Sun-Times* used the Bell Telephone Co. of Pennsylvania as an example of the success possible with a planned program to achieve this end. The *Sun-Times* said:

"Today's executives must be broad-gauged, well-read men interested in everything from the Bible to bookkeeping. Yet it is ironical that this age of specialization seems to be developing some bosses who often are disinterested in ideas and events not directly related to their jobs. . . .

"But President Wilfred D. Gillen of the Pennsylvania Bell Telephone Co. should be applauded by every American for taking a wiser view. He realized that the young executive, despite his technical know-how, needed training that would prepare him to make the broad decisions required by modern business. So he has sent 36 of his bosses-of-the-future to the University of Pennsylvania for a full-time, 10-month course in the liberal arts.

"The plan has been termed a 'success' by both the company and the university. Course 'graduates' agree they are prepared to make 'better decisions.'"

"Our great universities certainly provide a climate in which Chicago area firms, which want to, could use the Pennsylvania plan.

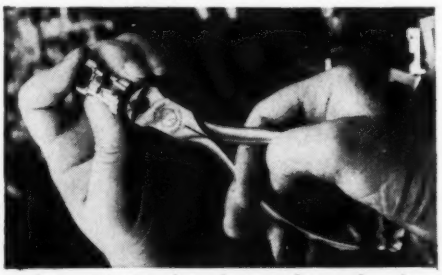
"Intelligent leadership is a cornerstone of business as well as government. Everyone—the bosses, the nation and the underlings—would benefit by schooling executives in logic, esthetics, philosophy and ethics."

V V

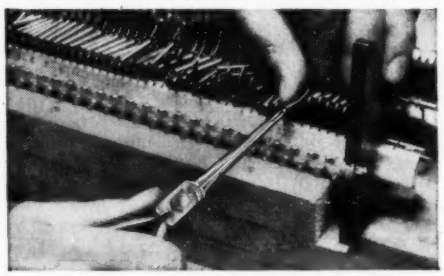
>> It has been said that a smile is an inexpensive mechanism that puts you ahead automatically. Ask the man who owns one.

"UTICA® PLIERS
have given us convincing evidence of
HIGH QUALITY"
say production engineers
at Smith-Corona Inc.

"In manufacturing a quality typewriter we need durability, dependability and accuracy in our hand tools, and that is what we get from Utica," they add.



A precut stepping dog carrier spring is trimmed to size by UTICA® No. 65 nippers.



A very popular tool at Smith-Corona is the UTICA® No. 777 needle nose pliers.

Bell crank link is snapped to key lever by UTICA® No. B224 duck bill pliers.

Smith-Corona's new Eighty-Eight secretarial office typewriter. UTICA TOOLS® have an essential part in producing this fine instrument.

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In Canada: Adlam Tool & Supply Co., Ltd., Montreal

J. N. Johnson Elected President Of Florida Independent

Following the annual meeting of the stockholders of Inter-County Telephone & Telegraph Co., held recently in the company's offices in Fort Myers, J. N. Johnson was elected president and general manager, succeeding G. W. Thompson who became chairman of the board.

J. N. JOHNSON

Other officers elected were E. E. Patterson, vice president, and Paul E. Brannen, secretary and treasurer. Directors elected were E. E. Patterson, H. B. Crandell, R. E. Parks, John H. Fears and G. W. Thompson.

The company reports that it expects to be 100 per cent dial-operated during the coming year. The board of directors approved a 1955 construction budget of approximately one million dollars for extensions and betterment of the service. It was further indicated that 1954 expansion and earnings were the greatest in the company's history. The Inter-County system provides service from 19 exchanges in 12 southwest Florida counties, connecting more than 22,000 telephones.

V V

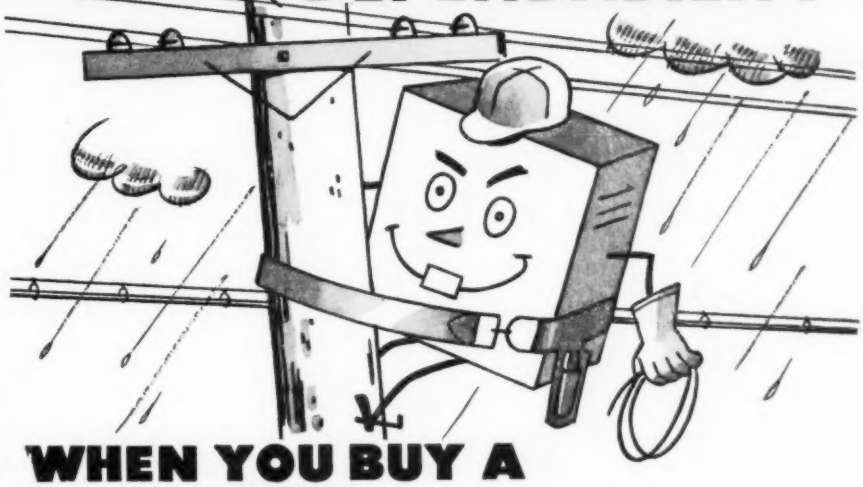
General of Illinois Sells 3.30% Series of Bonds

General Telephone Co. of Illinois on Mar. 3 sold at par 3¼ million dollars principal amount first mortgage bonds, 3.30 per cent series due 1985. The bonds were taken by five institutions.

At the same time General of Illinois called for redemption 3¼ million dollars worth of its first mortgage bonds, 3⅞ per cent series due 1982. These bonds have been held by seven institutions. The call price on the redeemed bonds was 103.93 per cent.

General Telephone of Illinois furnishes service to more than 184,000 telephones. Its headquarters are in Springfield, Ill.

YOU BUY DEPENDABILITY



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RAYTHEON ENGINEERING REPORT

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Careful testing and inspection of this unit reveals:

1. Electrical qualities in no way impaired (see chart).
2. A noticeable lack of rust or corrosion on chassis, hardware and components.
3. Original paint shows no sign of deterioration.
4. No evidence of embrittlement or cracking in varnish on magnetic components.
5. All hardware sound and secure.
6. Cable firm and unbroken.
7. Lacing intact with all wiring firmly in original position.
8. All soldered joints secure and strong.

(Signed) George L. Blais
ENGINEERING DEPT.

The dependability of Raytheon RectiChargeRs is amply demonstrated by the service records of units now in use. A typical example is shown in the Engineering Report at the right. And there's no reason why the "old" RectiChargeR described in the report can't go on giving the same faithful service for many more years.

It's no accident that Raytheon RectiChargeRs are setting performance records. Every detail of electrical and mechanical design has been carefully worked out with dependability as the guiding principle.

You get dependability automatically when you buy a Raytheon RectiChargeR, just as you get fully automatic battery charging — with constant voltage output over the complete load range regardless of input change — without under or overcharging.

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RAYTHEON PRODUCTS INCLUDE: RectiChargeR* battery chargers; RectiFilteR* battery eliminators; Voltage stabilizers (regulators); Transformers; Tubes and other electronic equipment.

*Reg. U. S. Pat. Off.

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Illinois Consolidated Plans to Cut Over Major Exchange

Illinois Consolidated Telephone Co. of Mattoon, Ill., recently revealed detailed plans for the conversion of its Hillsboro exchange to automatic operation. Scheduled for completion before the end of the current year, the project will require an expenditure of more than $500,000, according to R. A. Lumpkin, president of the company.

A new building to house the central office equipment will be erected. The building will be two stories high with a full basement. It will cover a ground area 45 feet by 65 feet.

The dial switching equipment will be located on the first floor in a room approximately 40 feet by 45 feet. The remainder of the first floor will be occupied by the company's local commercial offices. In addition to the heating plant and air conditioning equipment, the basement will contain a cable entrance vault and space for the central office power plant.

The second floor of the building is to be occupied by the manual toll and information switchboards and various facilities for the operators. Included in the latter is an operators' rest room, dinette, locker room and toilet rooms.

The building will be of fireproof construction faced with brick and stone. Care has been taken in its design so that the building may be readily expanded to meet future growth.

The initial installation will provide equipment sufficient to serve 2600 main telephones. At the present time, there are over 2100 main telephones and about 425 extension telephones connected through the Hillsboro switchboard. The new equipment will have capacity to serve all telephones now connected to the Butler central office. Under this plan, Irving and Butler telephones would be connected without the present toll charge, according to R. D. Carlyle, general commercial manager of the company.

Plans to convert the Hillsboro, Ill., exchange of the Illinois Consolidated Telephone Co. were announced at a dinner attended by officers of the company and Hillsboro civic leaders. Among those attending were (left to right): R. D. CARLYLE, general commercial manager; A. A. WILSON, general plant manager; H. M. JONES, district commercial manager, of Taylorville, Ill., and PAUL HENRY, Hillsboro commercial manager.

A new unattended dial office at Irving is a part of the company's project. This work is necessitated by plans to fit the Hillsboro area into the national toll dialing set-up. The new equipment at Irving will also be housed in a new fireproof building.

V V

Kramer Named Vice President Of United of Kansas

Carl L. Spaid, president of United Telephone Co. of Kansas, Inc., has announced that J. G. Kramer has been named vice president and general manager of the company, which has headquarters in Kansas City.

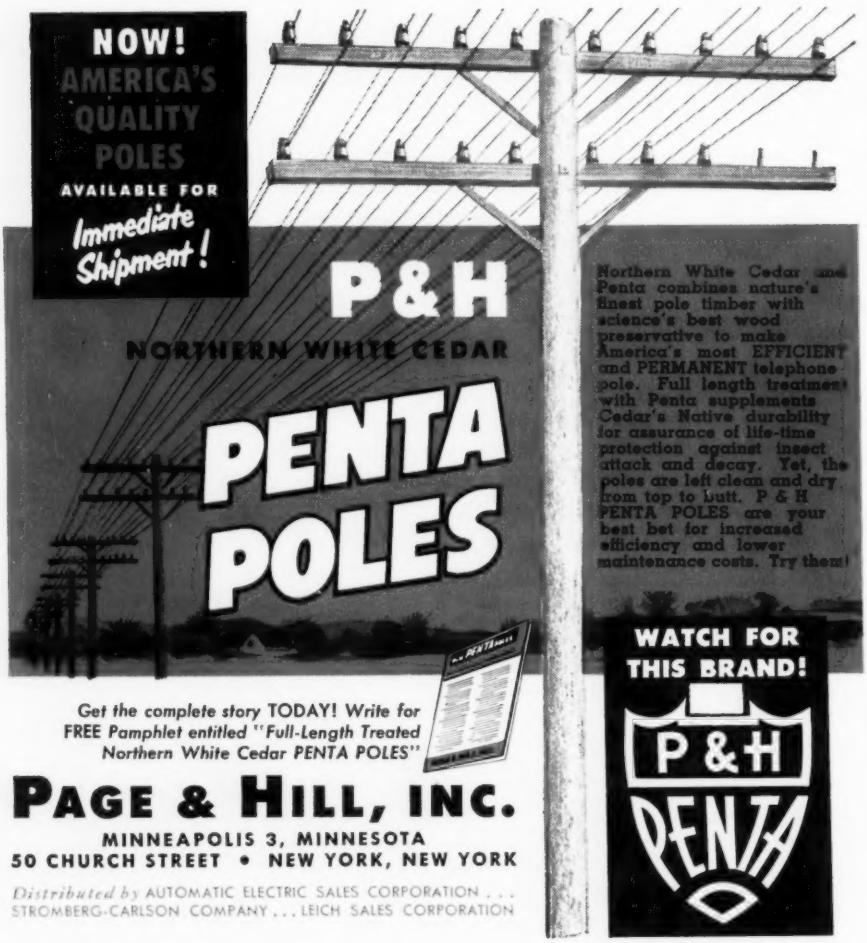
Mr. Kramer has been serving as general plant manager. He has been with the company since 1927.

V V

New York Committee Conducts Wire Tap Investigation

In New York a six-member joint legislative committee of four Republicans and two Democrats named on Feb. 25, are conducting a state-wide investigation of illegal wire-tapping.

The wire-tap question popped up recently when the New York City Anti-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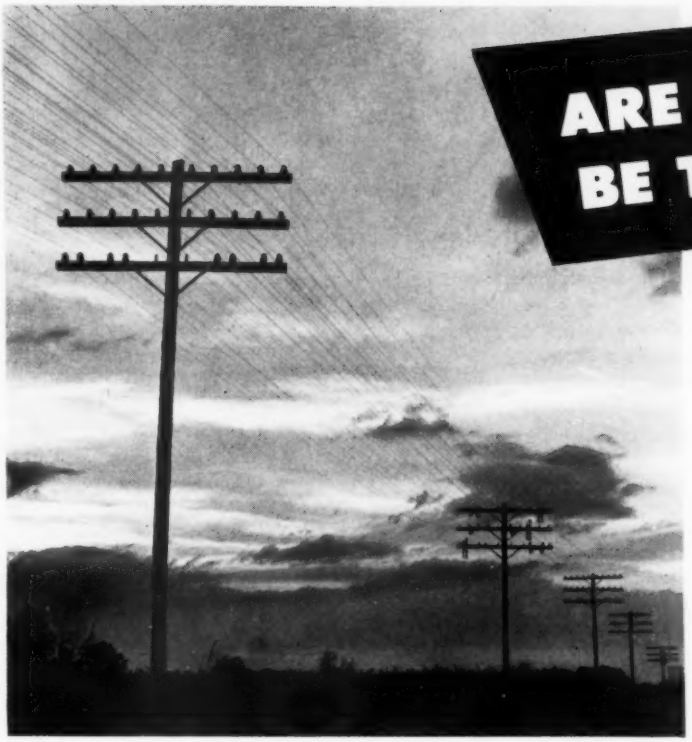

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ANSWER: "YES" . . . and future poles will last even longer. During the past 28 years, Taylor-Colquitt's research has added many years to the life and usefulness of poles. And this research will go on . . . to make poles that are lighter, stronger, more economical and more quickly available.

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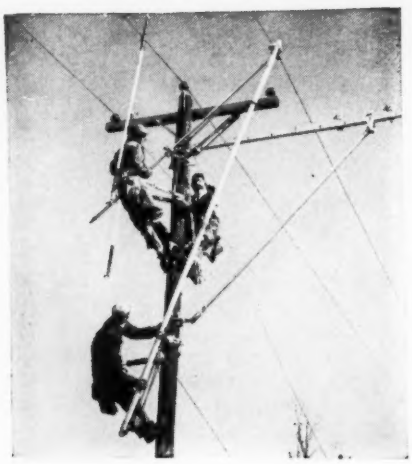

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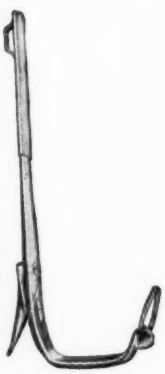

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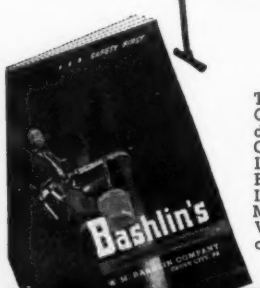

The new Bashlin Catalog gives full details on the Complete Bashlin Line of Safety Equipment for Linemen and Maintenance men. Write for your copy.

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Crime Committee revealed that an illegal wiretap set-up had been operating, tapping the telephones of prominent persons and corporations (TELEPHONY, Mar. 5, p. 31).

The committee disclosed that police raided the headquarters on Feb. 11, but made no arrests, although two telephone company employees were suspended.

The disclosures brought investigations by District Attorney Frank S. Hogan and the Federal Bureau of Investigation and as a result of the first inquiry three persons were indicted and released in bail for future trial. The defendants, all charged with conspiracy and illegal tapping of telephones are the two telephone men, and the occupant of the E. 55th St. apartment.

The grand jury which returned the true bill continued hearing witnesses and it is expected that further indictments will be found. Among those questioned were two detectives, who raided the apartment and then decided to make no arrests after the telephone company refused to make a complaint.

Meanwhile the Associated Licensed Detectives of New York State, comprising 200 of the 300 private investigators in New York, adopted a resolution condemning wiretapping by "any one."

In Washington, on Mar. 1, Representative Emanuel Celler, (D.) Chairman of the House Judiciary Committee, introduced a bill to limit wiretaps to cases involving the nation's security or kidnapping. *(See In the Nation's Capital,* this issue).

V V

General of Ohio Adds 100,000th

General Telephone Co. of Ohio, Marion, is now the 14th Independent telephone company in the nation to serve 100,000 telephones, according to Clare E. Williams, president of the company. General of Ohio's 100,000th telephone was installed in the home of Mr. and Mrs. Lorice Sergent in the company's Plain City exchange, it was reported on Mar. 3.

V V

Israel's Telephone Output

About 15,000 telephone units are now produced by Israel's Telrad Co. annually. The plant, a joint venture of Solel Boneh and the British-affiliated United Near East Co., began operations in 1951 with an assembly line for imported telephone parts. Later, it subcontracted to domestic manufacturers and expanded its own facilities. Today the plant manufactures two-thirds of its telephone parts locally.

East African City Installs New Telephone Exchange

Mombasa's new £275,000 ($770,000) telephone exchange, complete with radio-telephone links with Nairobi, Dar-es-Salaam, Tanga and Kampala, and a potential capacity of some 7,000 lines, is now in operation in East Africa.

Previously there were some 2,050 telephone lines in Mombasa (Kenya), of which only 1,600 were in use. Now 4,000 lines will be available, and at the cut-over 184 new subscribers were connected. This figure will be increased as fast as new lines and underground cables can be laid.

V V

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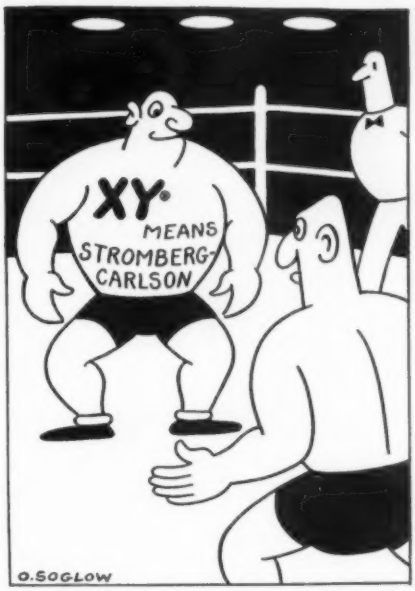

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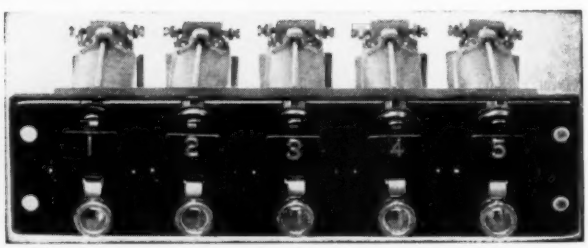

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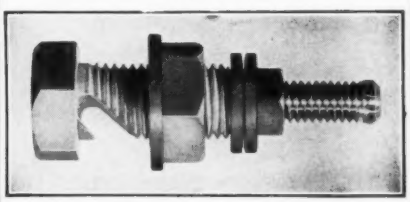

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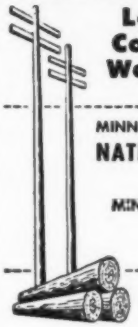

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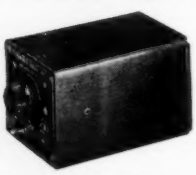

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Index to ADVERTISERS

	Page
Abbott Coin Counter Co.	—
Acker Drill Company	—
Acme Visible Records, Inc.	41
Acorn Insulated Wire Co., The	—
Alphaduct Wire & Cable Co.	53
American Appraisal Company, The	58
American Chain & Cable Co.	
Page Steel & Wire Div.	57
Wright Hoist Div.	—
American Creosoting Co.	13
American Electrical Heater Mfg. Co.	—
American Steel & Wire Co.	—
American Telephone & Telegraph Co.	—
Ansonia Wire & Cable Co., The	—
Armstrong Cork Co., Glass Insulator	—
Art Steel Company, Inc.	—
Atlantic Creosoting Co., The	61
Automatic Electric Sales Co.	25, 32-33, 39, 63
Baker Wood Preserving Co., The	61
Bashlin Company, W. M.	58
Bell Telephone Laboratories, Inc.	12
Berry & Co., L. M.	—
Bethlehem Steel Company	—
Bjornson Construction Co.	59
Bishop Mfg. Co.	—
Boardman, Ltd.	—
Buckeye Telephone & Supply Co.	60
Burgess-Manning Co.	—
Burroughs Corp.	27
C&D Batteries, Inc.	—
Cabaniss-Pogue Company	59
Cable Breather Corp., Inc.	62
Cable Spinning Equipment Co.	—
Calculagraph Company	—
Carney & Co., B. J.	61
Cascade Pole Co.	61
Cereske Co., William	—
Chance Co., A. B.	—
Chase Brass & Copper Co.	—
Christiansen Co., C. M.	61
Cleverly Electric Works, The	60
Coffing Hoist Co.	—
Communi-Catering	58
Commercial Cord & Supply Co., Inc.	—
Copperweld Steel Co.	—
Creasman-Marshall Co.	61
Cullom & Ghertner	—
Davis Construction Co.	61
Design Service Company	58
Diamond Wire & Cable Co.	—
Dierks Forests, Inc.	61
Donnelley & Sons, R. R.	—
Dow Chemical Co., The	45
Duo Safety Ladder Corp.	—
Electric Storage Battery Co., The	35
Electric Specialty Co.	—
Eppinger & Russell Co.	61
Everstick Anchor Co.	—
Executive Service Corp.	—
Fitchburg Engineering Corp.	—
Florida Research Co.	59
Foley Constr. Corp., Robert E.	59
General Cable Corporation	—
General Electric Company	—
General Insulated Wire Works, Inc.	—
General Machine Products Co., Inc.	—
General Telephone Directory	16
Gould-National Batteries, Inc.	—
Graybar Electric Co.	—
Greenlee Tool Co.	—
Haley & Co., R. G.	—
Ham's Construction Co.	—
Harris-McBurney Company	—
Henkels & McCoy	58
Hill, Cyrus G.	59
Hirsch Organization, Inc., Gustav	—
Holan Corp., J. H.	—
Holtzer-Cabot Div.	—
Homelite Corp.	—
Hubbard & Co.	—
Indiana Steel & Wire Co.	54
Ingram-Richardson Mfg. Co.	—
International Creosoting & Construction Co.	61
International Harvester Co.	—
International Standard Electric Corp.	—
Irwin Auger Bit Co., The	—
Johns-Manville	—
Kander, Allen	—

	Page
Kano Laboratories	—
Katolight Corp.	—
Kearney Co., Jas. R.	—
Kellogg Switchboard & Supply Co.	4-7
Klein & Sons, Mathias	52
Koiled Kords, Inc.	—
Koppers Co., Inc.	—
Leich Sales Organization	28-29
Line Equipment Sales	—
Line Material Co.	—
Linen Thread Co., Inc., The	—
Loomis Advertising Co.	37
Lorain Products Corporation, The	51
Lowell Insulated Wire	—
Mahood, Edwin T.	—
Mastercraft Plastics Co., Inc.	—
McCabe-Power Auto Body Co.	—
McElroy Manufacturing Corp.	—
Monsanto Chemical Co.	9
Morrison Steel Products, Inc.	—
Morton Construction Co.	59
Murer & Smith	—
Murphy Engineering Laboratory	—
Natco Corporation	—
National Carbon Division	—
National Pole & Treating Div.	61
National Telephone Supply Co.	64
Neale Construction Co.	59
North Bros. Mfg. Co., Div. of the Stanley Works	—
North Electric Mfg. Co.	14-15
Onan & Sons, D. W.	—
Osmose Wood Preserving Co.	—
Ostlund, Evert M.	59
Overton, Company, S. E.	—
Owens-Illinois	—
Page & Hill, Inc.	56
Partridge Lumber Co., T. M.	61
Phelps Dodge Copper Products Corp.	—
Piedmont Wood Preserving Co.	61
Pioneer Latex & Chemical Co.	51
Porcelain Products, Inc.	—
Preformed Line Products Co.	43
Premax Products	—
Radio Engineering Products Limited	—
Raytheon Mfg. Co.	55
Rebuilt Electrical Equipment	—
Recordak Corp.	—
Reliable Electric Co.	—
Remington Rand Inc.	—
Rex Corporation, The	49
Roanwell Corp.	—
Runzel Cord & Wire Co.	—
Schauer Mfg. Co.	—
Signal Engineering & Mfg. Co.	—
Sloan, Cook & Lowe Co.	58
Seymour Smith & Son, Inc.	—
Soapstone Duct Co.	—
Stewart Bros.	62
Stromberg-Carlson Co.	2-3, 11, 46-47, 59
Superior Cable Corporation	—
Suttle Equipment Co.	61
Taylor-Colquitt Co., The	57
Telectric Co., The	—
Tel-E-Lect Products, Inc.	—
Telefon Fabrik Automatic	—
Telephone Answering & Recording Corp.	—
Telephone & Power Supply Co.	61
Tele-Systems, Inc.	—
Tele-Wire Supply Co., Inc.	—
Telkor, Inc.	—
Texas Creosoting Co.	61
Thompson Chemicals Corp.	—
Transandean Associates	—
United States Steel Corp. American Steel & Wire Co.	—
United States Steel Corp. Coal Chemical Div.	8
Utica Drop Forge & Tool Corp.	54
Utilities Contracting Co.	—
Utility Tool & Body Co., Inc.	—
Wavell Showcase & Fixture Inc.	—
Western Electric Co.	—
Weston Electric Instrument Corp.	—
Whitney Blake Co.	—
Williams Inspection Co., A. W.	61
Wilton Elect. & Telephone Constr. Co.	59
Wiremold Co., The	50
York-Hoover Corporation	—

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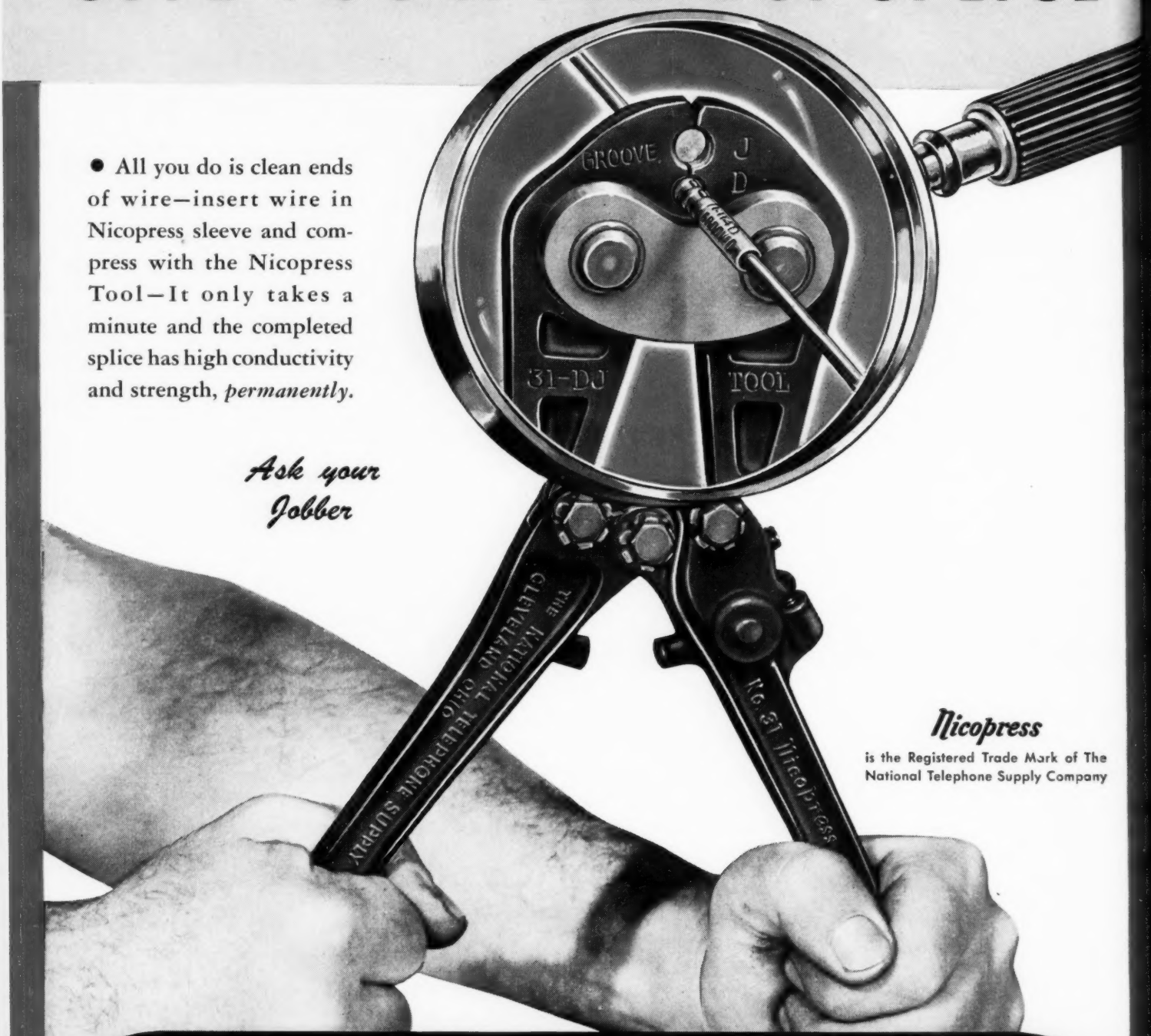

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